CITY AND COUNTY OF SAN FRANCISCO

BEST MANAGEMENT PRACTICES PROGRAM FOR WASTEWATER POLLUTION PREVENTION

October 1, 1990

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Best management
practices program for
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HOW TO USE THIS DOCUMENT

The Department of Public Works (DPW) recognizes that complete perusal of this program plan may be infeasible and/or unnecessary for many City and County of San Francisco (CCSF) agencies. An agency to be impacted by the Best Management Practice (BMP) provisions might be best served by reading only those document sections specific to the agency's required responses to the BMPs. The DPW recommends the following reading schedule for agencies which wish to expedite the review process:

- **Executive Summary**
- **1.0 Introduction**
- **2.0 Program Management and Coordination**
- **3.0 Organization of City Agencies sections:**
  - **3.1 Introduction**
  - **Appropriate section describing duties of your City agency (see Table of Contents)**
  - **3.5 Summary**
- **4.0 Implementation Program sections:**
  - **4.1 Introduction**
  - **4.2 Format of BMP Sections**
- **Cross-Index - use to identify new actions required by your City agency**
  - **Appropriate Best Management Practice sections of Chapter 4.0 (as identified in Cross-Index)**
  - **4.6 Summary, including Table 4.6**

As an additional aid in using this document, a glossary (**Chapter 8.0**) is provided to define specialized terms and acronyms used in this program plan.

CROSS-INDEX
CITY AGENCY--BEST MANAGEMENT PRACTICES

This cross-index is designed as a quick reference for City agencies to identify their involvement in the Best Management Practice (BMP) provisions. For each developing agency designated in this Program Plan, the relevant BMPs, report section, and page number are listed.

DEVELOPING AGENCY	BMP*	REPORT SECTION	PAGE NO.
Chief Administrative Office			
Solid Waste Management Program	E1P	4.3.1	4-3
		4.3.1.5	4-7
	E1M	4.3.1.5	4-7
	E1C	4.3.1	4-3
		4.3.1.5	4-7
	E2P	4.3.2	4-10
		4.3.2.5	4-15
	E2C	4.3.2	4-10
		4.3.2.5	4-15
	E3C	4.3.3	4-17
		4.3.3.5	4-20
	P2P	4.5.2	4-40
City Attorney	R1	4.4.1	4-27
		4.4.1.3	4-29
	R2	4.4.2	4-30
		4.4.2.3	4-31
	R3	4.4.3	4-33
		4.4.3.3	4-34
	R4	4.4.4	4-36
		4.4.4.3	4-36

* First two characters refer to BMP; third character (if applicable) identifies target sector: Public (P), Municipal (M) or Commercial/Industrial (C).

CROSS-INDEX
CITY AGENCY--BMP (continued)

DEVELOPING AGENCY	BMP*	REPORT SECTION	PAGE NO.
Department of Public Health	E1C	4.3.1.5	4-7
	R4	4.4.4	4-36
		4.4.4.3	4-36
Bureau of Environmental Health Services	E3C	4.3.3.5	4-20
Hazardous Materials Program	E2C	4.3.2.5	4-15
	E3C	4.3.3.5	4-20
	E4C	4.3.4.5	4-25
Toxics and Safety Education	E1M	4.3.1.5	4-7
	E2M	4.3.2	4-10
		4.3.2.5	4-15
	E3M	4.3.3	4-17
		4.3.3.5	4-20
	E4M	4.3.4	4-22
		4.3.4.5	4-25

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CROSS-INDEX
CITY AGENCY--BMP (continued)

DEVELOPING AGENCY	BMP*	REPORT SECTION	PAGE NO.
Department of Public Works	E1P	4.3.1	4-3
		4.3.1.5	4-7
	E1M	4.3.1	4-3
		4.3.1.5	4-7
	E2P	4.3.2	4-10
		4.3.2.5	4-15
	E2C	4.3.2	4-10
		4.3.2.5	4-15
	E4P	4.3.4	4-22
		4.3.4.5	4-25
	P1M	4.5.1	4-38
		4.5.1.3	4-39
Bureau of Street and Sewer Repair	P1M	4.5.1.3	4-39
Industrial Waste Division	E1C	4.3.1	4-3
		4.3.1.5	4-7
	E1M	4.3.1.5	4-7
	E3M	4.3.3.5	4-20
	E3C	4.3.3.5	4-20
	E4M	4.3.4	4-22
		4.3.4.5	4-25
	E4C	4.3.4	4-22
		4.3.4.5	4-25
	P1M	4.5.1.3	4-39
SF Muni-SF CityTV	E1P	4.3.1.5	4-7

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CITY AND COUNTY OF SAN FRANCISCO
BEST MANAGEMENT PRACTICES PROGRAM
FOR
WASTEWATER POLLUTION PREVENTION

TABLE OF CONTENTS

Section			Page
Executive Summary			i
1.0	Introduction		1-1
	1.1	Purpose and Goals	1-1
	1.2	Background	1-1
	1.3	Source Control Measures	1-4
	1.4	Program Structure	1-5
	1.5	Relationship to Other Planning Documents	1-11
	1.6	Document Structure	1-12
2.0	Program Management and Coordination		2-1
	2.1	Introduction	2-1
	2.2	City Agency Responsibilities	2-1
	2.3	Implementation Priorities	2-1
	2.4	Coordinated Campaigns	2-3
	2.5	Scheduling	2-3
	2.6	Funding	2-3
	2.7	Program Guidance	2-4
		2.7.1 Special Monitoring Program	2-4
		2.7.2 Public Survey	2-4
		2.7.3 New Regulations	2-4
	2.8	Reporting	2-5
3.0	Organization of City Agencies		3-1
	3.1	Introduction	3-1
	3.2	Agencies/Programs within the Purview of the CAO	3-3
		3.2.1 Purchasing Department	3-3
		3.2.2 Department of Public Works (DPW)	3-4
		3.2.2.1 Bureau of Water Pollution Control (BWPC)	3-4

CITY AND COUNTY OF SAN FRANCISCO
BEST MANAGEMENT PRACTICES PROGRAM
FOR
WASTEWATER POLLUTION PREVENTION

TABLE OF CONTENTS

Section			Page
	3.2.2.2	Industrial Waste Division (IWD)	3-4
	3.2.2.3	Bureau of Street Cleaning/Urban Forestry	3-5
	3.2.2.4	Bureau of Street and Sewer Repair	3-5
	3.2.2.5	Bureau of Building Inspection	3-5
3.2.3		Solid Waste Management Program (SWMP)	3-6
3.3		Agencies/Programs within the Purview of the Mayor's office	3-7
3.3.1		Recreation and Park Department	3-7
3.3.2		Fire Commission	3-7
3.3.3		Public Health Commission	3-8
	3.3.3.1	Department of Public Health (DPH)	3-8
	3.3.3.2	City Hospitals	3-10
3.3.4		City Planning Commission	3-11
3.3.5		Public Utilities Commission (PUC)	3-11
3.4		Committees Appointed By the Board of Supervisors	3-11
3.4.1		Hazardous Materials Advisory Committee (HMAC)	3-12
3.4.2		Hazardous Waste Advisory Committee (HWAC)	3-12
3.5		Summary	3-13
4.0		Implementation Program	4-1
4.1		Introduction	4-1
4.2		Format of BMP Sections	4-1
4.3		Educational Control Measures	4-3
4.3.1		E1 - HW Dumping Impacts	4-3
	4.3.1.1	Status of City Programs - Public	4-3
	4.3.1.2	Status of City Programs - Municipal	4-4
	4.3.1.3	Status of City Programs - Commercial/Industrial	4-5
	4.3.1.4	Program Changes or Additions	4-5
	4.3.1.5	Implementation	4-7
4.3.2		E2 - Agricultural Chemicals Use	4-10

CITY AND COUNTY OF SAN FRANCISCO
BEST MANAGEMENT PRACTICES PROGRAM
FOR
WASTEWATER POLLUTION PREVENTION

TABLE OF CONTENTS

Section			Page
		4.3.2.1 Status of City Programs - Public	4-10
		4.3.2.2 Status of City Programs - Municipal	4-11
		4.3.2.3 Status of City Programs - Commercial/Industrial	4-12
		4.3.2.4 Program Changes or Additions	4-12
		4.3.2.5 Implementation	4-15
	4.3.3	E3 - Oil/Grease Controls	4-17
		4.3.3.1 Status of City Programs - Public	4-17
		4.3.3.2 Status of City Programs - Municipal	4-17
		4.3.3.3 Status of City Programs - Commercial/Industrial	4-18
		4.3.3.4 Program Changes or Additions	4-18
		4.3.3.5 Implementation	4-20
	4.3.4	E4 - Rainfall/Runoff Contact	4-22
		4.3.4.1 Status of City Programs - Public	4-22
		4.3.4.2 Status of City Programs - Municipal	4-22
		4.3.4.3 Status of City Programs - Commercial/Industrial	4-23
		4.3.4.4 Program Changes or Additions	4-23
		4.3.4.5 Implementation	4-25
4.4		Regulatory Control Measures	4-27
	4.4.1	R1 - Improper HW Disposal	4-27
		4.4.1.1 Status of City Codes	4-27
		4.4.1.2 City Code Changes or Additions	4-28
		4.4.1.3 Implementation	4-29
	4.4.2	R2 - Improper Refuse Disposal	4-30
		4.4.2.1 Status of City Codes	4-30
		4.4.2.2 City Code Changes or Additions	4-31
		4.4.2.3 Implementation	4-31
	4.4.3	R3 - Oil/Grease Controls	4-33
		4.4.3.1 Status of City Codes	4-33
		4.4.3.2 City Code Changes or Additions	4-34

CITY AND COUNTY OF SAN FRANCISCO
BEST MANAGEMENT PRACTICES PROGRAM
FOR
WASTEWATER POLLUTION PREVENTION

TABLE OF CONTENTS

Section				Page
			4.4.3.3 Implementation	4-34
		4.4.4	R4 - Rainfall/Runoff Contact	4-36
			4.4.4.1 Status of City Codes	4-36
			4.4.4.2 City Code Changes or Additions	4-36
			4.4.4.3 Implementation	4-36
	4.5		Public Agency Control Measures	4-38
		4.5.1	P1 - Sewer Inlet Stencilling	4-38
			4.5.1.1 Status of City Programs - Municipal	4-38
			4.5.1.2 Program Changes or Additions	4-38
			4.5.1.3 Implementation	4-39
		4.5.2	P2 - Convenient HW Collection	4-40
			4.5.2.1 Status of City Programs - Public	4-40
			4.5.2.2 Program Changes or Additions	4-41
	4.6		Summary	4-42
5.0			Study Plan	5-1
6.0			Special Monitoring Program	6-1
	6.1		Introduction	6-1
	6.2		General Approach	6-1
	6.3		Identification of Toxicants of Potential Concern	6-2
	6.4		Status of Current Monitoring	6-2
	6.5		Proposed New Monitoring Efforts	6-3
		6.5.1	Richmond-Sunset Influent Monitoring	6-3
		6.5.2	Separate Sewers Area Monitoring	6-4
	6.6		Quality Assurance (QA) / Quality Control (QC)	6-4
	6.7		Implementation	6-6
	6.8		Summary	6-6
7.0			References	7-1

CITY AND COUNTY OF SAN FRANCISCO
BEST MANAGEMENT PRACTICES PROGRAM
FOR
WASTEWATER POLLUTION PREVENTION

TABLE OF CONTENTS

Section		Page
8.0	Glossary	8-1

APPENDICES

Appendix A: RWQCB Order No. 90-093 (Permit)
Appendix B: Garbage Cans & Garbage Can'ts brochure
Appendix C: Training handout (DPH, TSS)
Appendix D: List of informational brochures regarding agricultural chemicals
Appendix E: Applicable City Municipal Codes
Appendix F: HHWCF Second Annual Report

CITY AND COUNTY OF SAN FRANCISCO
BEST MANAGEMENT PRACTICES PROGRAM
FOR
WASTEWATER POLLUTION PREVENTION

LIST OF TABLES

Title		Page
1.4-A	Implementation Program BMPs	1-6
1.4-B	Study Plan BMPs	1-8
1.4-C	Best Management Practices and the Target Sectors of San Francisco	1-10
4.5-A	Total Drum Volumes Shipped from the HHWCF	4-45
4.5-B	On and Off Site Management of HHWCF Waste	4-47
4.6	Current Status of BMP Implementation by City and County of San Francisco Agencies	4-48

CITY AND COUNTY OF SAN FRANCISCO
BEST MANAGEMENT PRACTICES PROGRAM
FOR
WASTEWATER POLLUTION PREVENTION

LIST OF FIGURES

Title		Page
1.2	City and County of San Francisco Clean Water Facilities	1-3
3.1	City and County of San Francisco Agencies Responsible for Hazardous Materials/Waste Management	3-2
4.5-A	Hazardous Waste Delivered to the HHWCF by Product Type	4-44
4.5-B	Off Site Management of HHWCF Waste for Two Years of Operation	4-46
6.5	Vincente Street Drainage Basin	6-5

EXECUTIVE SUMMARY

This document presents a Program Plan for the City and County of San Francisco (CCSF) to minimize the level of toxic substances entering the sewer system and ultimately the Pacific Ocean and San Francisco Bay. It was prepared in response to an Environmental Protection Agency (EPA)/Regional Water Quality Control Board (RWQCB) wastewater discharge permit (EPA Permit No. CA0037681/RWQCB Order No. 90-093; issued June 20, 1990) which required the implementation and study of several pollutant source control measures, termed Best Management Practices (BMPs). This Program Plan identifies both the ongoing and new tasks necessary for the City to demonstrate compliance with the permit's BMP provisions.

Source control measures or BMPs may be implemented through educational, regulatory, and public agency programs. The EPA/RWQCB permit identified 18 specific BMPs, to be addressed in a two stage process. The first stage, the Implementation Program, includes ten BMPs that are considered to be of proven cost-effectiveness and amenable to immediate implementation. The remaining eight BMPs are assigned to the Study Plan (to be submitted under separate cover); the cost-effectiveness of these source control measures requires further study before their implementation is proposed.

This document describes the City's plans for completing both the Implementation Program and the Study Plan, and for developing a Special Monitoring Program. The monitoring program will assess the effectiveness of the source control measures in reducing the level of toxic substances in the City sewer system.

A review of existing programs and activities undertaken by City agencies indicates that efforts to date have concentrated on the safe storage and handling of hazardous materials/waste, and more recently, the reduction of hazardous waste in the solid waste stream directed to landfills. This Program Plan emphasizes a new focus in the City's hazardous materials/waste control efforts: the liquid waste stream entering the sewer system.

San Francisco's record with regard to control of toxics entering its sewer system is quite good. In fact, as a result of ongoing programs, the City already complies at least partially with many of the Implementation Program and Study Plan BMP requirements identified

in the permit. For the Implementation Program requirements, several CCSF educational programs come very close to full compliance with the educational control measures (E1-HW Dumping Impacts, E2-Agricultural Chemicals Use, E3-Oil/Grease Controls, and E4-Rainfall/Runoff Contact). Mostly minor additions to existing programs will achieve full implementation of these BMPs. In terms of the regulatory control measures (R1-Improper HW Disposal, R2-Improper Refuse Disposal, R3-Oil/Grease Controls, and R4-Rainfall/Runoff Contact), the City has codes which address the BMP language for R1-R3, but no codes which address R4. Evaluation of the current codes will be necessary for R1-R3 and a new code(s) must be drafted and passed to satisfy R4. The City must develop a new program to comply with public agency control measure P1-Sewer Inlet Stencilling. On the other hand, the City is in full compliance with P2-Convenient HW Collection.

Achievement of full compliance with the Implementation Program and Study Plan BMPs should not be excessively burdensome, but will require the cooperation of over two dozen agencies currently involved in hazardous materials and waste management activities in San Francisco. The Department of Public Works (DPW), the lead agency with regard to ensuring compliance with the BMPs, will oversee the coordination of these existing activities as well as the implementation of the new measures identified in this document.

1.0 INTRODUCTION

1.1 PURPOSE AND GOALS

This document presents a Program Plan for the City and County of San Francisco (CCSF) to minimize the level of toxic substances deposited into the sewer system and ultimately into the Pacific Ocean and San Francisco Bay. The deposition and occurrence of toxic substances in the sewer system has detrimental effects to not only the wastewater treatment system, but also, more importantly, to the body of water receiving the system's effluent. Toxic substances, even in very low concentrations, are potentially detrimental to aquatic habitats and organisms. If aquatic organisms are affected and they are part of the human food chain, the potential exists for risks to human health as well, through fish and shellfish consumption. The goal of this Program Plan is pollution prevention. By reducing the deposition of toxic substances into the sewers, the potential for deleterious impacts to receiving waters, aquatic life, and human health is reduced.

This Program Plan was drafted in response to a recently issued Environmental Protection Agency (EPA)/Regional Water Quality Control Board (RWQCB) wastewater discharge permit which requires the implementation and study of toxics control measures. This Program Plan identifies both the ongoing and new tasks necessary for the City to demonstrate compliance with the permit.

1.2 BACKGROUND

On June 20, 1990, the San Francisco Bay RWQCB adopted Order No. 90-093 (Appendix A), specifying the requirements which CCSF must satisfy in order to comply with a federal NPDES permit (CA0037681), issued by EPA, to discharge wastewater to the Pacific Ocean. The requirements are based on provisions of the federal Clean Water Act and the California Water Code. The permit is for discharges from the Southwest Ocean Outfall (SWOO) and the Oceanside Treatment Facility (Figure 1.2). The latter is still under construction, and is scheduled for completion in 1993.

CCSF has a combined sewer system which collects both urban runoff and sanitary sewage. When the Westside Transport receives more wet weather flow than can be processed at the treatment plant, excess flow is decanted and discharged through the SWOO into the receiving waters. The decanting mechanism consists of a series of baffles and weirs within the Westside Transport that removes floatable solids prior to entering the SWOO.

Contrary to past assumptions, recent studies have identified urban runoff as a major contributor of pollutants to surface waters (U.S. EPA, 1982). Urban runoff results when water from sources such as rainfall, irrigation, or street cleaning come into contact with pollutants present on city streets, parking areas, roofs, industrial sites, or other man-made surfaces. Runoff carries the pollutants from these surfaces into the sewer system.

Chemical analyses indicate that the types and amounts of pollutants in runoff are significant, and similar to those found in wastewater discharged from wastewater treatment plants and industrial sites. Examples of these pollutants include heavy metals, grease and oil, agricultural chemicals, and bacterial and viral contaminants (Woodward-Clyde, 1990).

As a result of these studies, efforts to control urban runoff pollutants have increased. However, because of the intermittent nature of urban runoff, the use of traditional control strategies such as treatment at a water pollution control plant has not proven to be cost-effective. Therefore the strategies for pollution control of urban runoff have moved to the next step, pollution prevention.

Pollution prevention strategies attempt to control pollutants at their sources by preventing their introduction into the environment in the first place. As a result of the Santa Clara Valley Nonpoint Source Control Study (Woodward-Clyde, 1990), an inventory of control measures for storm water was compiled and evaluated based on the experience of public agency personnel. Several of these control measures are included in this Program Plan and may be considered "tools" to address the City's urban runoff.

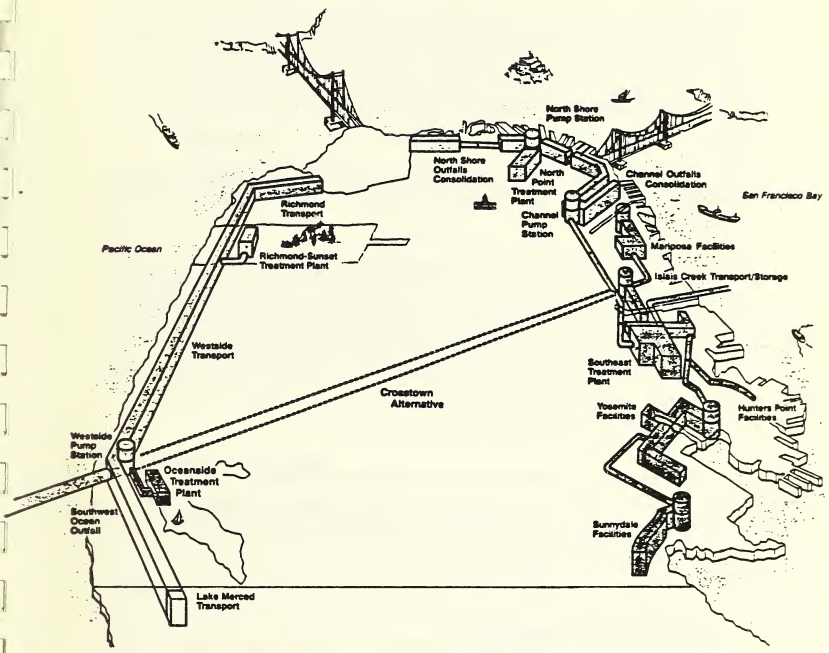


Figure 1.2 City and County of San Francisco Clean Water Facilities

The Westside Transport overflow mechanism allows excess flows (decant) that cannot be treated at the Richmond-Sunset plant to be discharged through the Southwest Ocean Outfall (SWOO).

Source: CCSF, 1989a

These source control measures may be categorized by the way in which they are implemented. Generally, there are three ways: as educational programs, as regulations, or as public agency actions. Each method addresses a different sector of society. Educational programs are designed to educate and inform the public that they are responsible and can make a contribution. Regulations are aimed more at businesses, especially small businesses that have not been regulated in the past. Public agency actions insure that municipalities are doing their part. The use of all three tools is necessary to effectively address the problem because all sectors of society are responsible for pollution prevention.

The RWQCB Order includes requirements for secondary treatment in the new permit, but the RWQCB also recognizes that the City will have to continue relying on the decanting mechanism when large storm events occur. In order to reduce the potential human health and environmental risk associated with the decant flows, the Order also includes requirements for source control measures, termed in this case, Best Management Practices (BMPs). The BMPs are intended to reduce the quantity of toxics or hazardous substances entering the sewer system and leaving in the decant.

A survey of existing programs indicates that CCSF already has many of the tools necessary to control urban runoff. Up to this time however, the use of these tools has been focused on the solid waste stream. This Program Plan will add a new focus--the liquid waste stream or wastewater.

1.3 SOURCE CONTROL MEASURES

In contrast to a treatment measure, which addresses pollutants only after they have already entered the waste stream, a source control measure attempts to prevent pollutants from entering the waste stream at all.

Best management practices (BMPs) are source control measures. BMPs, as defined in the Federal regulations (40 CFR 130.2(m)), are methods, measures or practices selected by an agency to meet its nonpoint source control needs. BMPs include, but are not limited to, structural and nonstructural controls and operation and maintenance procedures.

BMPs may be implemented in several ways including as educational, regulatory, and public agency control measures. **Educational control measures** use education, public information and technology transfer to disseminate information to the public, small businesses, community and neighborhood groups. **Regulatory control measures** develop and implement new or amended regulations or public policy directives. **Public agency control measures** are implemented by planning, public works, and health agencies. This last implementation strategy encompasses inspections, maintenance, repairs, new facility construction and other public agency functions (Woodward-Clyde, 1990).

1.4 PROGRAM STRUCTURE

The implementation of the BMPs has been structured by RWQCB as a two-stage process. The first stage, the Implementation Program, consists of 10 BMPs: 4 educational, 4 regulatory, and 2 public agency (Table 1.4-A). The second stage, the Study Plan, contains 8 BMPs: 2 educational, 1 regulatory, and 5 public agency (Table 1.4-B). The Implementation Plan is to be submitted to the RWQCB by October 1, 1990, and the Study Plan is due January 1, 1991. The RWQCB considers the Implementation Program BMPs to be cost-effective source control measures which should be ready for implementation in the near future. Conversely, the Study Plan BMPs are expected to require further study of their cost-effectiveness before implementation is proposed.

TABLE 1.4-A

IMPLEMENTATION PROGRAM
BEST MANAGEMENT PRACTICES (BMPs)

Educational Control Measures

E1 - Educate re: the impacts that result when oil, antifreeze, pesticides, herbicides, paints, solvents, or other potentially harmful chemicals are dumped into sewers.

E2 - Educate re: the proper use (e.g., application methods, frequencies, and precautions) and proper management of fertilizers, pesticides, herbicides, and other potentially harmful chemicals.

E3 - Educate re: the effective use of "housekeeping" practices, including the use of absorbents, cleaning compounds, and oil/grease traps for controlling oil and grease in gas stations, automotive repair shops, parking areas, commercial/industrial facilities, and food service facilities.

E4 - Educate re: the need to keep rainfall and runoff from contacting potential contaminants. Describe typical examples of the problem and practical solutions.

Regulatory Control Measures

R1 - Research, strengthen (if necessary), and enforce regulations which give the Discharger the legal authority to control the improper disposal of potentially harmful wastes.

R2 - Research, strengthen (if necessary), and enforce regulations which give the Discharger the legal authority to prevent the improper disposal of soil, debris, refuse, or other pollutants into storm drains, sewers and catch basins.

TABLE 1.4-A

IMPLEMENTATION PROGRAM
BEST MANAGEMENT PRACTICES (BMPs)
(Continued)

R3 - Research, strengthen (if necessary), and enforce regulations which give the Discharger the authority to require oil and grease controls in areas which are significant sources (e.g., gas stations, automotive shops, wrecking yards, machine shops, commercial/industrial facilities, parking areas, and food service establishments).

R4 - Develop and implement regulations which require landowners and/or tenants to provide covers (e.g., roofs, tarps) to keep rain off of areas which contain contaminants (e.g., chemical storage areas, waste storage areas, contaminated industrial areas); and to keep runoff from draining through areas which contain contaminants.

Public Agency Control Measures

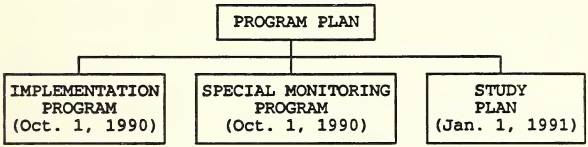
P1 - Label storm drain inlets and provide signs along the banks of storm drains, sewers, catch basins and creeks explaining the environmental impacts of dumping wastes.

P2 - Develop and implement programs which provide convenient means for people to properly dispose of oil, antifreeze, pesticides, herbicides, paints, solvents, and other potentially harmful chemicals (recycle if possible).

TABLE 1.4-C
BEST MANAGEMENT PRACTICES AND
THE TARGET SECTORS OF SAN FRANCISCO

	Target Sector		
BMP	Public	Municipal	Commercial/Industrial
Implementation Program			
E1	X	X	X
E2	X	X	X
E3		X	X
E4	X	X	X
R1	X	X	X
R2	X	X	X
R3	X	X	X
R4		X	X
P1		X	
P2	X		
Study Plan			
E1		X	X
E2	X		X
R1		X	X
P1			X
P2		X	
P3		X	X
P4		X	X
P5			X

In addition to the Implementation Program and the Study Plan, the third component of the Program Plan is the Special Monitoring Program. The monitoring program will assess the effectiveness of the source control measures in reducing the level of toxic substances in the decant. The Special Monitoring Program is due October 1, 1990. The general structure of the Program Plan is presented below. The dates indicate deadlines for submittal to the RWQCB.



1.5 RELATIONSHIP TO OTHER PLANNING DOCUMENTS

As a result of recent state legislation, CCSF is presently preparing several documents or plans related to management of waste. The two major efforts are briefly described below:

County Hazardous Waste Management Plan (CHWMP) - This plan is for the management of hazardous waste and hazardous materials. The plan was authorized by AB 2948 (Tanner, 1986) and encoded in the California Health and Safety Code, as Chapter 6.5, Article 3.5. The Solid Waste Management Program within the Chief Administrator's Office is developing the plan with guidance provided by the Hazardous Waste Advisory Committee. The primary purpose of the plan is to control hazardous waste via source reduction, recycling, reuse, treatment, and disposal.

Countywide Integrated Waste Management Plan (CIWMP) - This plan requires counties to implement a schedule to divert solid waste from landfill facilities via source reduction, recycling, and composting activities. The plan must also include an element describing areas suitable for waste disposal.

Although each of these waste plans has a different purpose and set of goals, sections of one plan often overlap or at least complement sections of another plan, including this

Program Plan. Not surprisingly, the completion of these plans often requires similar programs or actions to be taken by the same City agencies. This Program Plan was drafted to comply with the RWQCB Order while at the same time complementing the other waste management plans and avoiding, as much as possible, requirements for redundant and/or conflicting programs.

1.6 DOCUMENT STRUCTURE

The organization of the Program Plan is as follows:

- Chapter 2.0 - Program Management and Coordination
- Chapter 3.0 - Organization of City Agencies
- Chapter 4.0 - Implementation Program
- Chapter 5.0 - Study Plan
- Chapter 6.0 - Special Monitoring Program
- Chapter 7.0 - References
- Chapter 8.0 - Glossary
- Appendices

2.0 PROGRAM MANAGEMENT AND COORDINATION

2.1 INTRODUCTION

As the City agency charged with planning, operating, and maintaining the City's sewer system, the Department of Public Works (DPW) has primary responsibility for the ongoing management and coordination of this Program Plan. DPW's specific responsibilities will include coordinating the development of Memoranda of Understanding (MOUs) between City agencies, budgeting and scheduling for implementation activities, hiring outside contractors, providing technical information, and complying with the RWQCB reporting requirements of the Program Plan.

2.2 CITY AGENCY RESPONSIBILITIES

Although DPW is responsible for the implementation of the Program Plan, execution of this comprehensive program will require cooperation from a large number of City agencies. DPW is relying on the specific expertise of other City agencies to successfully develop and implement the program and to assure CCSF's compliance with the wastewater discharge permit.

2.3 IMPLEMENTATION PRIORITIES

The City plans to implement the BMPs in city-wide programs, rather than targeting the particular geographic areas that contribute directly to the Oceanside discharges. Because of the compact size of San Francisco, the DPW believes that this represents the most environmentally sound and technically feasible approach for implementation of the BMP program.

The Department of Public Works recognizes that the implementation of this program will be complex, and will require several years and a relatively significant budget. Some of the BMPs may be suitable for almost immediate implementation, while others may require significant preparation, or "lead" time. As a result, the Implementation Program

BMPs, as well as the Study Plan BMPs, will have different starting dates and the schedule for any particular BMP may be "out of phase" with the schedules for other BMPs.

DPW has established implementation priorities which may be grouped into four categories. The categories are differentiated by factors such as degree of benefit to the environment and ease of implementation (e.g., number of agencies involved, cost, and level of existing programs). The categories in order of descending priority are listed below.

Priority 1 - Immediate Tasks

These are tasks expected to require short or no lead times. Examples include: preparing a utility bill insert educating the public about the impacts of hazardous waste disposal to the sewers, implementing the Special Monitoring Program, and arranging agreements between City agencies.

Priority 2 - Training Programs

Modifying training programs already in place for City employees and the commercial/industrial sector should be relatively easy to accomplish.

Priority 3 - Education Campaign

An overall, coordinated public education campaign will take some time to develop and execute. A well integrated and comprehensive program will include workshops for businesses, lessons for school children, and opportunities for general community participation.

Priority 4 - Regulations

Both the implementation of new regulations and the modification of existing ones will require extensive research and discussion between the City agencies involved in their development and enforcement. Some initial research may identify the need for a higher priority to be assigned to some regulations in order to satisfy the BMP language, as in the cases of regulatory control measures R3 (for petroleum-based oils) and R4.

2.4 COORDINATED CAMPAIGNS

The DPW believes that the educational and training aspects of the program must be coordinated into overall campaigns. The presentation of a well integrated and comprehensive program will be much more effective and efficient in reaching the target audiences than a series of separate actions whose relation to one another may not be evident. As described above (see 2.3 Implementation Priorities), the development of these campaigns will require some time, but the end result should be very effective.

2.5 SCHEDULING

The Department of Public Works expects that there will be a lead time before actual implementation of each of the BMPs can begin. **Actual implementation will not begin upon RWQCB approval of this Program Plan.** The lead times for each BMP will vary, with some lead times being quite significant and others being relatively short. During the lead time, administrative tasks such as Memoranda of Understanding (MOUs), budgets, and contracts will need to be negotiated between City agencies. Agencies may also have to wait for the next budget cycle to begin before full program implementation can commence. While waiting, however, they may begin to collect any necessary technical information.

There is no way to predict what the lead times will be for any particular BMP. So in outlining the implementation of each BMP, DPW has listed time frames for the complete execution of each task, with the understanding that the actual start date will depend upon its lead time.

2.6 FUNDING

Funding for this program will occur on an annual appropriation basis through the City's budgetary process. BMP activities will be prioritized and program costs will be developed annually for activities to be performed during the next fiscal year. Program development will follow the implementation priorities identified in section 2.3 of this chapter. DPW will coordinate the program's funding requirements via agreements and work orders between the various departments implementing program elements.

2.7 PROGRAM GUIDANCE

The selection of the particular source control measures included in the Order was based on the best available data concerning the types and sources of toxicants in the decant. Both the City and RWQCB realize that as the program progresses, changes to the source control measures, monitoring, implementation priorities and approaches (videotape versus brochure) may be warranted by feedback on the program's effectiveness. This feedback will be provided by, among other mechanisms, the Special Monitoring Program, and public surveys.

2.7.1 SPECIAL MONITORING PROGRAM

It is expected that the data generated by the Special Monitoring Program will eventually guide the development of the Program Plan. As a result, the Special Monitoring Program will not only assess the effectiveness of the source control measures, but it will also identify new directions for source control measure implementation.

2.7.2 PUBLIC SURVEY

Source control measures place a strong emphasis on public education and participation. Effective implementation of the source control measures depends on a clear sense of the public's awareness of the problem, the most effective means for increasing their understanding, and their willingness to participate in the solutions. Public surveys are an excellent tool for gathering this data. Both a baseline as well as progress surveys will be conducted to track the effectiveness of the program and to provide information for program modifications.

2.7.3 NEW REGULATIONS

In addition to modifications as a result of internal feedback from the Special Monitoring Program and the public surveys, DPW expects that it will be necessary to modify the

program in response to new regulations at the state and federal level. Often, new regulations specify mandatory programs which overlap existing programs. DPW will maintain sufficient flexibility in the program's implementation to comply with the RWQCB Order while at the same time accommodating other requirements administered by regulatory agencies.

2.8 REPORTING

Provision 8.d of the Order requires the discharger (CCSF) to submit an annual progress report by August 31 of each year, starting in 1991. This report will discuss activities performed in the previous fiscal year, programs and activities proposed for the following fiscal year, and the results of the special monitoring and study plan evaluations. The annual report will also identify the need for modification of source control programs (if necessary).

3.0 ORGANIZATION OF CITY AGENCIES

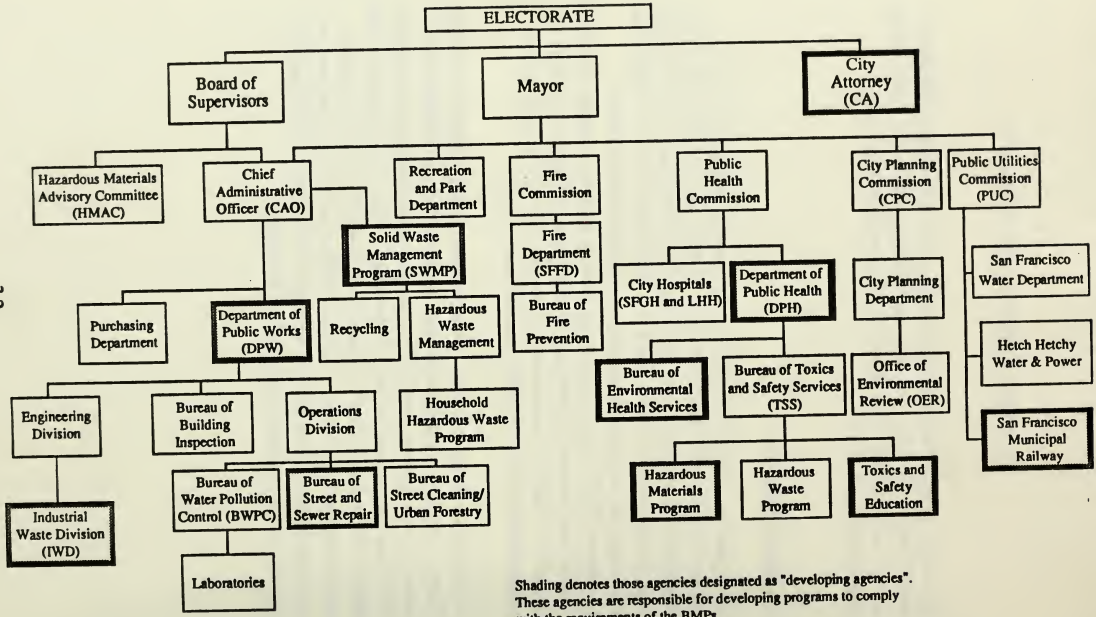
This chapter introduces the CCSF agencies expected to contribute to the fulfillment of the BMP requirements of the Oceanside waste discharge permit. A familiarity with the relevant activities of each will facilitate the understanding of their roles in implementation of the BMPs.

3.1 INTRODUCTION

The Department of Public Works (DPW) has the lead in preparing this document; however, compliance with the BMP provisions of the permit will depend on the activities of all City and County agencies concerned with toxics management. Over the last fifteen years, the number of such agencies has grown substantially, in response to the growing awareness of the hazards associated with many chemicals and the concurrent development of federal, state, and local regulations for hazardous materials. Within San Francisco, over two dozen separate agencies or programs may impact the ability of the City to meet its pollutant source control requirements. Figure 3.1 shows the principal agencies involved in the City's efforts to control toxics disposal.

The following sections briefly review the toxics control activities of agencies included in Figure 3.1. The agencies discussed are those that the DPW expects to have the greatest roles in the implementation of the BMPs. For organizational purposes, the discussion is divided into three sections: Section 3.2 describes the programs within the purview of the Office of the Chief Administrative Officer (CAO); Section 3.3 presents the agencies more directly within the purview of the Mayor's Office; and Section 3.4 discusses two committees appointed by the Board of Supervisors, the Hazardous Materials Advisory Committee and the Hazardous Waste Advisory Committee.

Figure 3.1:
CITY AND COUNTY OF SAN FRANCISCO
AGENCIES RESPONSIBLE FOR HAZARDOUS MATERIALS/WASTE MANAGEMENT



Shading denotes those agencies designated as "developing agencies". These agencies are responsible for developing programs to comply with the requirements of the BMPs

Note: For simplicity, agencies not directly impacted by required BMPs are not included in this exhibit

Finally, Section 3.5 summarizes the current status and focus of CCSF programs, and describes the overall change in approach that will be necessary to comply with the BMP requirements.

3.2 AGENCIES/PROGRAMS WITHIN THE PURVIEW OF THE CAO

Under the CAO, the three main bodies concerned with hazardous materials are the Purchasing Department, the Department of Public Works, and the Solid Waste Management Program (within the CAO's office). Their activities are described in the following sections.

3.2.1 PURCHASING DEPARTMENT

The Purchasing Department has responsibility for procuring a large proportion of the commercial products used by the City. Many of these products are potentially hazardous; the County Hazardous Waste Management Plan (CHWMP) reports that an estimated 50 percent of hazardous materials ordered by City agencies come through the Purchasing Department (CCSF, 1989b).

The Purchasing Department submits all hazardous product requisitions received from City agencies to the Department of Public Health for review and approval. Inventory records for all approved and subsequently purchased hazardous materials are maintained by the Purchasing Department's "materials coordinator." For each hazardous product stored in any of the 23 municipal storerooms and warehouses around San Francisco, the coordinator, with the aid of the Department of Public Health, keeps the Material Safety Data Sheet (MSDS) put out by the responsible manufacturer. An MSDS contains information on health effects, specific characteristics of the material such as ignitability, and proper handling and storage procedures. The CHWMP reports that up to 1,500 hazardous products may be in City storage at any one time (CCSF, 1989b).

The Department's direct involvement in generation and management of hazardous waste arises primarily through its responsibility for purchasing and maintaining cars and trucks for all CCSF agencies. Currently all City vehicles except motor coaches are procured by the Purchasing Department, which also oversees several repair shops in various locations

around San Francisco. Central Shops constitutes the largest facility; others are operated at the Port, San Francisco International Airport, the Recreation and Park Department, and the San Francisco Water Department (Thomas, 1990). Because motor vehicles can be significant sources of hazardous waste, Purchasing Department service facilities and vehicle yards should be assigned high priority in municipal source control activities.

3.2.2 DEPARTMENT OF PUBLIC WORKS (DPW)

The DPW plays a critical role in the City's efforts to meet the Oceanside permit BMP requirements. The DPW is the lead agency for responding to the Regional Board's requirements for the Oceanside discharge permit. Of the several divisions and bureaus which comprise the DPW, the major ones that will affect permit compliance are the Bureaus of Water Pollution Control, Street Cleaning/Urban Forestry, and Street and Sewer Repair in the Operations Division; and the Industrial Waste Division in the Engineering Division. The Bureau of Building Inspection will also be involved. The DPW units are discussed separately below.

3.2.2.1 Bureau of Water Pollution Control (BWPC)

The BWPC's operation and maintenance responsibilities include ensuring compliance with NPDES permits and California waste discharge requirements. The effectiveness of the treatment system itself is monitored by the BWPC's Laboratories division, which tests effluent and receiving waters to ensure compliance with applicable water quality regulations.

3.2.2.2 Industrial Waste Division (IWD)

One of the DPW's primary tasks is the enforcement of pretreatment requirements for discharges into the sewer system by industries; this task is performed by the Industrial Waste Division (IWD), which conducts monitoring and inspections of industrial discharges for various water quality parameters and chemical constituents.

3.2.2.3 Bureau of Street Cleaning/Urban Forestry

The Bureau of Street Cleaning/Urban Forestry is responsible for the removal of litter from City streets and sidewalks. This is accomplished through a regular street sweeping program: 90 percent of San Francisco's streets are swept at least once per week, and some sections are swept two or three times per week (Busher, 1990). If Bureau personnel suspect that an item found on the street is hazardous, they contact the Department of Public Health (DPH), which will make the final determination. If the material is hazardous, then its disposal becomes the responsibility of the DPH. This is an important component of the effort to minimize the entrance of toxics into the sewer system through storm drains and catch basins. The Bureau also oversees the maintenance of trees and other vegetation on City property alongside streets and sidewalks; the Bureau is thus responsible for the use of pesticides and fertilizers that could potentially enter into the sewer system--and eventually the Ocean or Bay--as runoff.

3.2.2.4 Bureau of Street and Sewer Repair

The tasks of maintaining all San Francisco roadways and maintaining the City's combined sewer system fall to this bureau. As in the Bureau of Street Cleaning/Urban Forestry, the importance of keeping toxics out of the sewers and receiving waters is impressed upon the personnel, who must often handle hazardous materials such as asphalt or tar when performing street repairs. Sewer repair specialists are especially aware of the impacts that certain hazardous wastes (e.g., strong acids) can have on sewer lines.

3.2.2.5 Bureau of Building Inspection

The Bureau of Building Inspection is the City agency responsible for issuing building permits for new construction and renovations. The agency also conducts a routine inspection program for all buildings within the city containing three or more units. The Bureau's involvement in hazardous waste management is tied to an ordinance passed by San Francisco in 1986, "Analyzing the Soil for Hazardous Waste" (Ordinance No. 253-86). Chief enforcement authority for the ordinance resides with the Department of Public

Health, but the Bureau distributes information about the requirements to permit applicants who will be affected.

3.2.3 SOLID WASTE MANAGEMENT PROGRAM (SWMP)

The SWMP focuses primarily on three issues for San Francisco residents and businesses: solid waste planning and rate setting, recycling, and hazardous waste management. SWMP staff are principal authors of the previously cited County Hazardous Waste Management Plan. The SWMP is also responsible for long-term planning for solid waste collection, diversion, and disposal, as well as overseeing the contractors who provide solid waste collection and disposal services for San Francisco. This includes assisting in the setting of rates for the two private firms contracted to manage solid waste in the City. This last responsibility is relatively minor, however; the Department of Public Works is responsible for actual review of the proposed rates.

The SWMP has become a very visible presence for City residents because of its campaigns to promote recycling and increase awareness of household hazardous waste. The efforts of the SWMP in recycling and hazardous waste management are described below.

Recycling - San Francisco's Recycling Program promotes solid and hazardous waste reduction and recycling in the residential and commercial sectors in San Francisco, through services such as curbside collection of recyclable materials, and development of educational programs for schools, businesses, and community groups. Hazardous materials that are recycled include used motor oil and paints.

Hazardous Waste Management - One of the primary concerns of the SWMP is the proper management of household toxics. The Household Hazardous Waste Program distributes brochures about proper management of hazardous household products and nontoxic alternatives, and produces periodic press releases about household hazardous waste issues. It is also involved in the management of the Household Hazardous Waste Collection Facility (HHWCF), a joint venture by San Francisco and a private waste management firm, the Sanitary Fill Company. The SWMP is also developing programs and services aimed at commercial hazardous waste generators. Among the services are a biannual newsletter "On the Safe Side" which assists small businesses in reducing their

hazardous waste, and a fact sheet for small quantity generators (SQGs). Among the planned activities are audits and workshops on waste reduction for SQGs, and waste self-audit checklists for service stations and several other groups of SQGs, a directory of recycling and waste management firms for SQGs, and SQG grants.

3.3 AGENCIES/PROGRAMS WITHIN THE PURVIEW OF THE MAYOR'S OFFICE

Under the Mayor's Office, apart from the CAO, the five primary agencies to be enlisted in the effort to minimize toxics in San Francisco's sewer system are: the Recreation and Park Department, the Fire Commission, the Public Health Commission, the City Planning Commission, and the Public Utilities Commission. All but the Recreation and Park Department would exert their influence through smaller programs under their supervision. Summaries of the agencies' roles follow.

3.3.1 RECREATION AND PARK DEPARTMENT

San Francisco's Recreation and Park Department is responsible for the upkeep of all of the City's many public parks and recreational areas. The application of pesticides and fertilizers that this task entails is an issue of potential concern for the DPW, as overuse or poor spraying methods can result in runoff of these chemicals into storm drains and sewers.

3.3.2 FIRE COMMISSION

The Fire Commission's involvement in hazardous materials management comes through the Fire Department, which has two important responsibilities with regard to toxics control. One derives from a provision in the Hazardous Materials Permit and Disclosure Ordinance which states that all storage permits issued by the Department of Public Health must have the approval of the **Fire Department**. The Fire Department has appointed one-full time person in its **Bureau of Fire Prevention** to coordinate and conduct the necessary inspections, and provides additional staff assistance to the inspector when necessary. The inspector looks for compliance with San Francisco's Fire

Code, which contains several provisions related to hazardous waste and hazardous materials storage. Installations inspected include underground storage tanks as well as above-ground facilities.

The Fire Department also fields the Hazardous Materials Emergency Response Team (ERT), which works closely with the Department of Public Health. ERT personnel are provided with special equipment, and are trained to quickly assess the severity of an emergency and if necessary contain or control the problem to protect the public. The ERT is called in on 50 to 100 events per year, of which two or three may be considered "major" (CCSF, 1989b).

3.3.3 PUBLIC HEALTH COMMISSION

Of all of the City agencies, the Public Health Commission plays the largest role in the management of hazardous materials, through its Department of Public Health (DPH). DPH has primary responsibility for enforcing the Hazardous Materials Permit and Disclosure Ordinance. Also directly within the purview of the Commission, however, is another department which must confront the problem of toxics disposal, the City Hospitals. The activities of these two departments are described below.

3.3.3.1 Department of Public Health (DPH)

As noted above, the DPH is the lead City agency with regard to the enforcement of legal requirements for the management of hazardous materials and hazardous waste. It exerts most of its authority for toxic materials through two major bureaus: the **Bureau of Toxics and Safety Services (TSS)** and the **Bureau of Environmental Health Services.** The latter is much less directly involved. Its general mandate is to ensure that private businesses and City-operated facilities function in an environmentally sound manner. Staff inspect restaurants, markets, schools, hospitals, swimming pools and dozens of other types of facilities to ensure compliance with applicable sanitation standards, and also investigate citizen complaints about noise, pollution, etc. Depending on the nature of the problem, Environmental Health Services personnel may turn over complaints to other City agencies. For example, mainline sewer problems would be referred to the BWPC.

The prime instrument in the DPH's efforts to control toxics is the Bureau of Toxics and Safety Services, which is divided into seven sections. They are: (1) the Hazardous Materials Program; (2) the Hazardous Waste Program; (3) Toxics and Safety Education; (4) Asbestos Management; (5) Occupational Safety and Health; (6) Employee Assistance; and (7) Special Projects. Only the first three are shown in Figure 3.1 and are discussed in more detail below, but some activities related to toxics disposal also take place in the other sections. For example, within Special Programs lie the responsibilities of enforcing the contaminated soil ordinance (Ordinance No. 253-86) and investigating community complaints regarding toxic pollution. The Asbestos Management group, in cooperation with the Department of Public Works, is involved in removal--and consequently disposal--of asbestos from City-owned buildings.

Hazardous Materials Program - This is the group with direct responsibility for administering the Hazardous Materials Permit and Disclosure Ordinance, as well as several other state and federal laws related to hazardous materials management. The number of businesses in San Francisco storing and handling hazardous materials, not including City-operated facilities, is estimated to be greater than 10,500 (CCSF, 1990a). Under the permit program, all of these enterprises must disclose what materials they have, prepare a detailed emergency response plan, and undergo an inspection by the DPH. Other significant activities performed by this unit include the implementation of the Superfund Amendments and Reauthorization Act (SARA) Title III requirements for "community right-to-know," enforcement and oversight of requirements for underground storage tanks (California Health and Safety Code, Chapter 6.7), development and management of a hazardous materials inventory database (California Health and Safety Code, Chapter 6.95, Article 1), and administration of the state requirements for businesses handling acutely hazardous materials (AHMs) (California Health and Safety Code, Chapter 6.95, Article 2). Hazardous Materials Program staff also conduct community and business outreach workshops, ensure other city agencies' compliance with hazardous materials regulations, train Fire Department personnel, and participate in regulatory development for toxics management (CCSF 1990a).

Hazardous Waste Program - The Hazardous Waste Program is charged with ensuring that all CCSF programs and projects comply with state laws for hazardous waste. Its major responsibility is coordinating the collection and disposal of hazardous waste from

all municipal worksites where such waste may be generated. The actual collection and disposal is performed by a private contractor.

Just recently, the Hazardous Waste Program received new responsibilities related to private sector regulation. Under a Memorandum of Understanding (MOU) with the State Department of Health Services, signed June 12, 1990, Program personnel are authorized to perform hazardous waste generator inspections. The inspection program will proceed in two phases: during Phase 1, begun July 1, 1990 and expected to last one year, inspections will be made only in response to community complaints; during Phase 2, once sufficient personnel have been trained, routine inspections will commence (Nakamura, 1990).

Toxics and Safety Education - This unit is responsible for hazardous materials training of over 10,000 City employees; regulations addressed include Title 8 (Right-to-Know) and Title 22 (Hazardous waste management) of the California Code of Regulations, and the Hazardous Materials Permit and Disclosure Ordinance. City employees included in the program are identified by job classes specified in California worker right-to-know legislation. All newly eligible employees receive five hours of training--supervisors receive ten hours--and subsequently undergo annual update training. Training curricula are tailored to the specific job descriptions; for example, Purchasing Department office workers will receive training different from that received by San Francisco Water Department water treatment plant operators (Sharmer, 1990).

3.3.3.2 City Hospitals

San Francisco General Hospital and Laguna Honda Hospital are the two major health-care facilities operated by the City and County of San Francisco. Each has its own programs for disposal of hazardous and infectious wastes. Hazardous wastes are handled by the engineering departments at the hospitals, while infectious wastes are handled by the housekeeping departments. The wastes--separated at all times--are picked up regularly by the appropriate private contractors. Each hospital requires separate training programs for hazardous materials and infectious waste management for all of their employees. Employees with greater potential for contact with these wastes will receive more comprehensive training in the relevant area (Ushida, 1990; Johnson, 1990).

3.3.4 CITY PLANNING COMMISSION

The City Planning Commission reviews all projects or programs, public and private, undertaken in San Francisco for their potential environmental consequences. This task is performed through the **Office of Environmental Review (OER)**, within the **City Planning Department**. Initiators of potential projects in the city, which may or may not involve construction, are required to submit descriptions of their plans to the OER, which then determines the level of environmental impact review required. New programs that the Department of Public Works or other City agencies initiate in response to the permit's BMP provisions may require full environmental impact reports (EIRs) (Maltzer, 1990).

3.3.5 PUBLIC UTILITIES COMMISSION (PUC)

San Francisco's Public Utilities Commission is divided into three departments: the **San Francisco Water Department, Hetch Hetchy Water and Power**, and the **San Francisco Municipal Railway**. The first two departments' places in the overall picture of hazardous waste generation in the City are actually relatively small, limited to the use of insecticides and herbicides on grounds surrounding their facilities. However, these sites, such as rights of way, and grassy areas alongside reservoirs, are dispersed over a wide geographic area. The PUC is currently developing its own training program on pesticide use for its employees (Rigler-Udo, 1990).

The San Francisco Municipal Railway department (SFMR) operates the City's public transit system, which includes buses, cable cars, electric buses, and a subway system. The garages and yards where the vehicles are housed and serviced constitute a significant municipal source of oil and grease wastes, making SFMR a high priority target for source control activities.

3.4 COMMITTEES APPOINTED BY THE BOARD OF SUPERVISORS

San Francisco's Board of Supervisors appoints two committees involved with hazardous substance management in the City, the Hazardous Materials Advisory Committee (HMAC) and the Hazardous Waste Advisory Committee (HWAC). The two groups are discussed separately below.

3.4.1 HAZARDOUS MATERIALS ADVISORY COMMITTEE (HMAC)

The HMAC is appointed by the Board of Supervisors under the authority of the City's Hazardous Materials Permit and Disclosure Ordinance. The Ordinance (originally passed in 1983 as Ordinance No. 578-83, but most recently amended and replaced by Ordinance No. 443-86) is the City's principal legal structure for management of hazardous materials. It contains storage, disposal, permitting and reporting requirements for specific business groups using hazardous materials.

The HMAC is made up of persons representing the City, business and scientific communities, public interest groups, and the general public. The 21 members are charged with the responsibility of reviewing and commenting on all relevant issues related to the implementation and coordination of local, state and federal laws for hazardous materials and hazardous waste control. In particular, they report to the Board of Supervisors and the Health Commission on the progress of implementation of the activities required by the Hazardous Materials Permit and Disclosure Ordinance. Other types of programs that they review concern underground tank regulation, outreach and public education, and household hazardous chemicals (CCSF, 1989b).

3.4.2 HAZARDOUS WASTE ADVISORY COMMITTEE (HWAC)

The HWAC is the counterpart to the HMAC in the realm of hazardous waste management in San Francisco. Appointed under the authority of AB 2948 (Tanner, 1986), which requires counties to prepare hazardous waste management plans, the committee's 12 members hail from the scientific and business communities, as well as environmental groups and other civic organizations.

The HWAC oversees and reviews the development of the County Hazardous Waste Management Plan (CHWMP) by the SWMP, and reports to the Board of Supervisors on issues related to the CHWMP's preparation, approval and administration. The committee is also responsible for soliciting public input about the CHWMP, by conducting public meetings and workshops during its preparation.

3.5 SUMMARY

There are over two dozen CCSF commissions, offices, departments, committees, bureaus, and programs concerned with the management and control of hazardous materials and hazardous waste in the City. Efforts to date have concentrated on the safe storage and handling of hazardous materials/waste, and more recently, the reduction of hazardous waste in the solid waste stream to landfills. This Program Plan adds a new focus to the City's hazardous materials/waste efforts; the liquid waste stream which enters the sewer system and eventually reaches the waters of the Pacific Ocean and San Francisco Bay.

As the agency charged with planning, operating, and maintaining the City's sewer system, the Department of Public Works has primary responsibility for implementing this Program Plan. However, as evidenced by the previous sections of this chapter, the execution of this Program Plan will require a city-wide, agency-wide effort. The success of the Program Plan implementation will depend on the level of cooperation and coordination developed by all City agencies involved in the effort.

4.0 IMPLEMENTATION PROGRAM

4.1 INTRODUCTION

This chapter describes the source control measures that must be implemented by CCSF in order to comply with its Oceanside wastewater discharge permit. The efforts required by City agencies involved in the Implementation Program are outlined and scheduled.

4.2 FORMAT OF BMP SECTIONS

Each of the BMPs is discussed in a separate section using approximately the same format for consistency and ease of comparison. When appropriate, the discussion in each section is divided by targeted sector. The format is generally as follows:

- **BMP** - Presents the language of the BMP, as it appears in the permit. Three keywords (or a "nickname") describing the BMP are listed and used throughout the document as a memory aid.

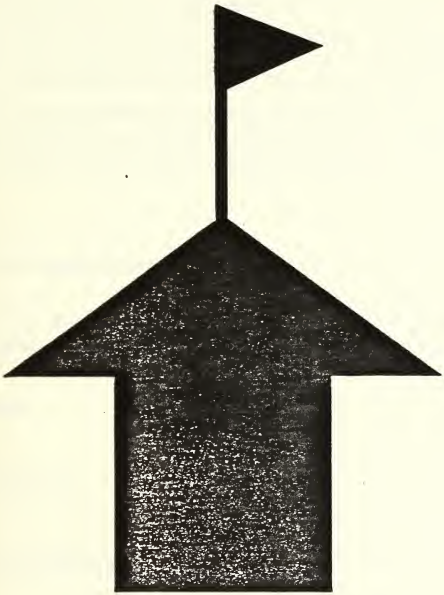
- **Targeted sectors and Developing CCSF Agency** - Lists the sectors of San Francisco for which the BMP is targeted and the specific CCSF agency responsible for development of the BMP for that sector. The City agency so designated is termed a "Developing agency."

- **Status of City Programs/Codes** - Presents an assessment of CCSF's current programs/codes as they pertain to the specific language of the BMP.

- **Program/Code Changes or Additions** - Specifies any new programs/codes, or changes to existing programs/codes which must be implemented by CCSF in order to satisfy the permit conditions.

- **Implementation** - Lists the specific tasks and subtasks necessary to implement the changes or additions described in the previous section.

The remainder of this chapter will address the Implementation Program for the first ten BMPs. Chapter 5.0 will discuss the Study Plan for an additional eight BMPs.



EDUCATIONAL CONTROL MEASURES

4.3 EDUCATIONAL CONTROL MEASURES

The educational control measures are discussed separately below; however, the Department of Public Works believes that, to have the greatest public impact, the educational measures should be implemented together as a complete educational campaign. Therefore, although the development of each of the educational measures will involve different agencies, tasks, and lead times, the time frames will be adjusted to set an overall schedule which coordinates the individual measures in an integrated educational campaign about the impacts of hazardous waste to the sewers and aquatic habitats.

4.3.1 E1 - HW Dumping Impacts

Educate re: the impacts that result when oil, antifreeze, pesticides, herbicides, paints, solvents, or other potentially harmful chemicals are dumped into sewers.

Targeted sectors	Developing CCSF Agency
Public	DPW/SWMP
Municipal	DPW
Commercial/Industrial	IWD/SWMP

4.3.1.1 Status of City Programs - Public

The CAO's Solid Waste Management Program (SWMP) is using several vehicles to educate the public about household hazardous waste disposal. The first is an educational brochure entitled "Garbage Cans & Garbage Can'ts" (Appendix B) distributed at the Household Hazardous Waste Collection Facility (HHWCF) and by mail upon request (see 4.5.2 P2 - Convenient HW Collection). This brochure provides information concerning household hazardous waste disposal, alternative products, hazardous waste reduction and recycling, and the potential impacts of household hazardous waste to people and the environment. In conjunction with the brochures, bus signs advertising the HHWCF and promoting non-toxic alternatives appear on MUNI buses.

Although there is general language in the brochure on the impacts to water and groundwater of household hazardous waste disposal, there is no language pertaining specifically to sewer impacts. The brochure, however, provides disposal information for all of the hazardous chemicals mentioned in E1 except for antifreeze, and this item is already scheduled to be added to the upcoming revision of "Garbage Cans and Can'ts".

In addition to the brochure, the SWMP also operates the Household Hazardous Waste (HHW) Hotline, which provides answers to the public's household hazardous waste questions.

To educate the public as early as possible, the San Francisco Recycling Program has developed a recycling curriculum known as the "4th R" for kindergarten through 5th grade schoolchildren (CCSF, 1988). The focus of the curriculum is primarily solid waste. However, there are some lessons on the origins of oil and the effects of oil on soil, water and plants. In addition, there are several lessons for 4th/5th graders on oil recycling. As part of these lessons, there is some discussion about the potential impacts of oil on the sewer system.

4.3.1.2 Status of City Programs - Municipal

At present, there are two major City programs for training CCSF employees about hazardous materials. The first is the Toxics and Safety Education Program within the Bureau of Toxics and Safety Services (TSS) of the Department of Public Health (DPH). This program provides basic hazardous materials training to all CCSF employees. One training handout includes some general language about avoiding the dumping of waste "down the drain" and another handout lists disposal procedures for hazardous waste produced by City departments (Appendix C). However, there is no specific language about how hazardous waste impacts the environment after it passes through the sewer system (Sharmer, 1990).

CCSF's other large municipal training program was designed by the Department of Public Works (DPW) to supplement the DPH hazardous materials training. All DPW employees receive annual review training, tailored somewhat to the different job categories' occupational needs (Goodhart, 1990). In general, the DPW hazardous chemical training usually includes some informal discussion of the effects of hazardous

waste disposal in or spills to the sewer system. However, there are no formal lessons or handouts in the training on this particular subject.

4.3.1.3 Status of City Programs - Commercial/Industrial

In the past, on an invitation basis, the Industrial Waste Division (IWD) has made presentations to various industry organizations, including groups from the printing, precious metals and automotive industries, concerning the impacts of disposing hazardous waste to sewers (Medbery, 1990). The IWD has also been very active in the California Water Pollution Control Association's (CWPCA) statewide educational workshop program. However, there is no systematic program for outreach to local industry.

CCSF's Department of Public Health (DPH) and IWD are currently drafting a joint letter to alert and remind local industry of their responsibilities under the State and Federal hazardous waste regulations. As a result, IWD expects to be conducting another series of industry presentations in the near future (Medbery, 1990).

The Hazardous Waste Management Program under the CAO's Solid Waste Management Program has just begun implementing several new projects aimed at educating businesses about hazardous waste reduction. A contractor has been hired to conduct workshops, perform about 100 waste audits for small quantity generators (SQGs), develop self-audit checklists, and evaluate process options for waste reduction.

4.3.1.4 Program Changes or Additions

Generally, CCSF's current programs address much of the intent of source control measure E1. However, there are some areas where additional activities are required to meet the specific language of E1. Proposed changes in the City's outreach agendas are presented below.

Public - In order for the City to comply with the language in E1, education efforts must address the specific impacts of liquid hazardous waste on the sewer system and aquatic ecosystems. In terms of public education, one of the most efficient ways of

disseminating information is through utility bill inserts. A survey by the SWMP showed that more participants learned about the Household Hazardous Waste Collection Facility through inserts in their utility bills than by any other means (CCSF, 1990b).

Another very likely vehicle for this additional information seems to be the SWMP's brochure, "Garbage Cans & Garbage Can'ts." The brochure will require additional language specifically emphasizing the harmful effects of disposing liquid hazardous wastes into the sewers.

Outreach to schoolchildren is another effective means of disseminating information about hazardous waste. Lessons could be developed following the format of the SWMP Recycling Program's 4th R curriculum, with titles such as "What is hazardous waste?," "What is the source of hazardous waste?," "How does the sewer system work?," and "What is the effect of hazardous waste on the environment?" SWMP will engage a consultant to develop the new curriculum, and then hire some San Francisco teachers to field test it. The new lessons will be presented to teachers at workshops and conferences by the consultant and SWMP or DPW staff. Distribution of the final product will be coordinated with the SWMP, with the new lessons billed as a supplement to the 4th R.

The SWMP currently operates school field trip programs for both the Water Pollution Control Plants (WPCPs) and the Household Hazardous Waste Collection Facility (HHWCF); these will be coordinated more closely with the presentation of the hazardous waste lessons. Tour guides will emphasize the public's role in preventing environmental pollution by hazardous waste, and hand out the revised "Garbage Cans and Can'ts" brochures. Class projects such as sewer inlet stencilling (see 4.5.1 P1 - Sewer Inlet Stencilling) would also complement the lessons, providing visual and practical reinforcement.

Still other potentially effective methods of reaching the public are talks to community groups and informational programs on the City's municipal cable television station, SF CityTV. A presentation to an organization such as the San Francisco Planning and Urban Research (SPUR) group could help significantly to put the issue in the public eye. As for the television medium, although funding for SF CityTV was deleted from the 1990-91 budget, it may be restored by January 1991, or certainly by July 1991 (Horen, 1990). The station could air both videotext and educational videotapes. Videotext would be used to make public service announcements (PSAs) regarding the HHWCF, the HHW

Hotline, and the sewer inlet stencilling program (see 4.5.1 P1 - Sewer Inlet Stencilling). "How-to" videotapes would be aired on topics such as: disposing of household hazardous waste, purchasing or making non-toxic alternative products, and using the sewer inlet stencils. A number of videotapes on HHW are already available, so CCSF would not necessarily have to produce its own videos (Duxbury & Associates, 1989).

Municipal - For the Toxics and Safety Education Program run by TSS, an additional handout must be produced to call specific attention to the impacts of hazardous chemicals to the sewers and aquatic ecosystems. This handout will be presented as part of a formal discussion by a speaker from IWD. Because this program reaches all City employees, the "Garbage Cans & Garbage Can'ts" brochure should continue to be distributed, and the "How-to" videotapes should be shown during the training sessions to take full advantage of this educational opportunity.

Because of the interaction of many of its agencies and employees with the sewer system, DPW's annual training program must include a formal lesson on the impacts of hazardous chemicals to the sewers and to aquatic ecosystems. The lesson should be tailored to each agency within DPW to provide examples of typical work situations where hazardous waste may enter the sewer system. In addition, the lesson should include informational handouts, including the "Garbage Cans & Garbage Can'ts" brochure.

Commercial/Industrial - As part of IWD's forthcoming joint letter with DPH to local businesses (see 4.3.1.3), a discussion of the impacts of hazardous waste on the sewers and the treatment plants will be included. In addition, a continuing series of workshops or presentations to industry groups will be initiated. Priority in workshop scheduling and frequency will be given to those groups representing industries that discharge pollutants of most concern to the sewer system.

4.3.1.5 Implementation

Implementation of the changes and/or additions noted above will require the series of subtasks outlined below for each activity; the expected time frame for completion of the entire activity follows the title. The City agencies/programs expected to take the lead responsibility are listed for each subtask.

Public

1)	Utility bills inserts		7 months
	a) Develop language	DPW	
	b) Produce inserts	DPW	
	c) Mail with bills	DPW	
2)	Garbage Cans & Garbage Can'ts brochure		6 months
	a) Develop language	SWMP	
	b) Produce brochures	SWMP/Consultant	
	c) Distribute brochures	DPW/SWMP	(Ongoing)
3)	School lessons on hazardous waste		9 months
	a) Develop new lessons	Consultant	
	b) Field testing of lessons	Selected SF Teachers	
	c) Produce lesson package	Consultant	
	d) Present to teachers	Consultant, SWMP/DPW	
	e) Distribute lessons	SWMP/DPW	
4)	Presentations to community groups		6 months
	a) Organize speakers bureau	DPW	
	b) Publicize speakers program	DPW/Consultant	
	c) Arrange presentations	DPW	(Ongoing)
5)	SF Muni - SF CityTV		12 months
	a) Research available videotapes	DPW/SWMP	
If necessary:			
	b) Hire video consultant	DPW/SWMP	
	c) Develop videotape outlines	Consultant	
	d) Develop videotext language	Consultant	
	e) Produce videotapes	Consultant	
	f) Air videotapes	SF Muni-SF CityTV	(Ongoing)

Municipal

1)	HW impact to sewers handout		3 months
	a) Develop specific language	DPW	
	b) Produce modified handout	DPW	
	c) Distribute training handout	TSE	
	d) Distribute during tours	DPW/SWMP	(Ongoing)
2)	HW impact to sewers training		6 months
	a) Develop training	IWD	
	b) Produce training materials	IWD	
	c) Conduct training	IWD	(Ongoing)

Commercial/Industrial

1)	Joint letter		2 months
	a) Develop specific language	IWD/DPH	
	b) Produce joint letter	IWD/DPH	
	c) Distribute letters	IWD/DPH	
2)	Workshops for SQGs		6 months
	a) Prepare agenda	IWD/SWMP	
	b) Prepare materials	IWD/SWMP	
	c) Notify businesses	IWD/SWMP	
	d) Conduct workshops	IWD/SWMP	(Ongoing)

4.3.2 E2 - Agricultural Chemicals Use

Educate re: the proper use (e.g., application methods, frequencies, and precautions) and proper management of fertilizers, pesticides, herbicides, and other potentially harmful chemicals.

Targeted sectors	Developing CCSF Agency
Public	DPW/SWMP
Municipal	TSE
Commercial/Industrial	SWMP/DPW

4.3.2.1 Status of City Programs - Public

Proper use and management of hazardous chemicals includes storage, transport and disposal, as well as actual use. In the SWMP's brochure "Garbage Cans & Garbage Can'ts" (Appendix B), which focuses primarily on disposal, several pesticide types (e.g., fungicides, insecticides, snail and slug poison) and herbicides are included in the lists of items which should be brought to San Francisco's Household Hazardous Waste Collection Facility (HHWCF). Many other items which would qualify as "potentially harmful chemicals" (e.g., paint thinner, used motor oil, dry cleaning solvent) also appear on the lists. Fertilizers, however, are not specifically mentioned.

As for actual use, the brochure presents a few general guidelines for hazardous chemicals in general. These include recommendations to read the product labels and follow directions for use, to use only the amount specified, and to use up all of the product, if possible, and to recycle, if not. There is also some discussion of safe delivery of the waste to the HHWCF. The public is instructed not to mix materials, to label all containers, and advised of the recommended packing and transport methods. Little storage advice is provided; the brochure suggests only that consumers maintain a household inventory of hazardous products, and cautions against letting hazardous materials sit in the sun or stay overnight in one's car.

In addition to "Garbage Cans and Can'ts," SWMP prepares occasional press releases on topics pertaining to household hazardous waste. Emphasis is on reducing reliance on

hazardous products, the use of safer alternatives, and recycling. The short articles are distributed every few months to local newspapers, television and radio stations. Past topics have included alternatives to commercial pesticides. In March of this year, recycling of used oil was the subject of a press release, and this was subsequently developed into a public service announcement by a local television station. The announcement was also broadcast on the radio (Trapalis, 1990).

A final public information source on handling of household hazardous waste is the Household Hazardous Waste (HHW) Hotline, mentioned in the discussion for education control measure E1 - HW Dumping Impacts. This outlet can disseminate information about available literature on agricultural and other hazardous chemicals; its effectiveness, however, is dependent upon people asking the appropriate questions.

4.3.2.2 Status of City Programs - Municipal

The bulk of the hazardous materials training received by CCSF agency employees is provided by the Toxics and Safety Education Unit of DPH's Bureau of Toxics and Safety Services. Over 10,000 municipal employees, identified by job classification under California's worker right-to-know legislation, have attended these sessions. Supervisors receive ten hours of initial training; other personnel receive five hours. Follow-up training is usually provided by the individual CCSF agencies. The focus of the initial training is on safe handling procedures for hazardous chemicals, with some variations in emphases added for different departments. Usually, however, pesticide, herbicide, and fertilizer application are not specifically addressed in these sessions (Sharmer, 1990).

Some City departments do however present information on proper use of agricultural chemicals in their own in-house training programs. Pesticide application is presently addressed by both the Recreation and Park Department and the Department of Public Works. In the latter department, trainers discuss the desirability of reduced reliance on chemical pesticides and the use of safer alternatives, as well as safety procedures (Goodhart, 1990). The Public Utilities Commission is currently developing its own curriculum for pesticide training. As presently envisioned, however, this training will focus on employee safety and regulatory compliance, rather than on waste reduction (Rigler-Udo, 1990). In general, City agencies appear to pay little attention to fertilizer application procedures.

4.3.2.3 Status of City Programs - Commercial/Industrial

The Hazardous Waste Management Program under the CAO's Solid Waste Management Program has just begun implementing several new projects aimed at educating businesses about hazardous waste reduction. A contractor has been hired to conduct workshops, perform about 100 waste audits for small quantity generators (SQGs), develop self-audit checklists, and evaluate process options for waste reduction. The Hazardous Waste Management Program is also investigating product substitution as a method for reducing hazardous waste generation, among both City agencies and SQGs, as well as developing a computerized database to facilitate waste exchange among industries. Under the latter program, an industry which requires a certain hazardous product may find that another industry generates that material as a waste. Both would recognize benefits--economic and/or regulatory--if the first obtains the material from the second (CCSF, 1990c).

The programs described above do not place particular emphasis on pesticide, herbicide, or fertilizer use, although these chemicals could certainly be included in any of the above approaches.

4.3.2.4 Program Changes or Additions

Overall, the City's current educational and outreach efforts on hazardous chemical use place relatively little emphasis upon the particular issue of agricultural chemical application and management. However, some mechanisms are already in place by which the desired information can be disseminated, and the revision of curriculums and programs to include this material should not be excessively burdensome. The proposed changes in the public, municipal, and commercial/industrial sectors are described below.

Public - Compliance with educational control measure E2 will require the City to pay increased attention to pesticide, herbicide, and fertilizer use in its hazardous waste education outreach efforts. A new flyer devoted specifically to use of chemicals in yards and gardens will be developed, perhaps by a consultant working with the SWMP. The San Francisco League of Urban Growers (SLUG) might be a useful resource for this endeavor. The brochure should address the environmental impacts of commercial

pesticides, herbicides, and fertilizers commonly used by homeowners, and promote the reduction of their use and the substitution of less harmful alternatives. This type of information is readily available from the Environmental Protection Agency (publications put out by the Office of Pesticides Program, or the Office of Public Affairs), and from numerous environmental groups (see Appendix D).

The production of the flyers should be coordinated with the distribution of a press release on this topic. The press release would point out the potential hazards of agricultural chemicals, recommend alternatives, and also refer to the availability of the flyer. Much of the language of the flyer could be coopted for the press release, so that expenses associated with the press release will be minimal, limited primarily to production and distribution expenses.

Several methods of distributing the flyers could be implemented. They could be mailed out as utility bill inserts or on their own, if designed attractively enough to catch the eye of the average consumer. In addition, their availability could be advertised on the Household Hazardous Waste Hotline; callers could leave their name and address to receive the flyer in the mail.

Other ways to disseminate information on agricultural chemicals include programs in City schools. The curriculum developed under the implementation plan for BMP E1 - HW Dumping Impacts, about the impacts of hazardous waste on the sewers and environment, should include lessons focusing specifically on chemicals used in home gardens and yards. When the lessons are presented, the new brochure envisioned above could be distributed to the students, along with a checklist of hazardous home and garden products, to be filled out by parents and children together (the need for parental supervision must be emphasized, as children should not be tempted to investigate these chemicals on their own). To complement the lessons, SWMP could also institute programs for field trips to community gardens, nurseries, local organic farms, etc., and for class presentations by guest speakers from such organizations. The development of these programs could be accomplished by the same education consultant hired to develop the classroom curriculum. Once the preparation of the curriculum and supplemental programs is complete, the SWMP could assume responsibility for their administration.

Of course, school children need not be the only targets for public education on agricultural chemicals. Adult education classes on gardening, landscaping, and yard care

represent good opportunities for community outreach. Neighborhood gardening clubs or neighborhood homeowner associations are also likely forums for information transfer. Representatives from such groups could be invited to attend agricultural chemical information sessions arranged by the DPW, with the intent that they would in turn relay the information to their fellow gardening enthusiasts. As in the case of educational control measure E1 - HW Dumping Impacts, a videotape, describing the information presented in the flyer discussed above, would be invaluable in educating the public as well as the municipal and commercial/industrial sectors.

Municipal - Currently, individual agencies using agricultural chemicals are conducting (or presently developing) their own employee training programs for pesticide and herbicide use. Emphasis on minimizing use and substituting safer alternatives is inconsistent across the agencies, and fertilizer use is virtually ignored. Perhaps the most effective means for meeting the intent of Implementation Plan E2 would be to develop an appropriate curriculum in a joint effort by all concerned agencies, with the requirement that the individual departments incorporate the final product into their own training programs. The project should be under the primary supervision of the Toxics and Safety Education unit of DPH, because of its extensive experience with curriculum development, but input from persons from other departments having experience with pesticide use and/or training must be actively solicited. Much useful information should be available from the same sources mentioned in the preceding section on public outreach.

Commercial/Industrial - Within San Francisco, commercial and industrial use of pesticides, herbicides, fertilizers and similar chemicals would likely be limited to the grounds surrounding individual establishments. Given the crowded development of the city, however, many businesses do not in fact have open areas around their buildings to which they would be applying these chemicals. For this reason, the actual target audience for this campaign is probably quite limited, and the use of limited budgetary resources for a general commercial/industrial outreach campaign is not warranted. Perhaps only a case-by-case approach--i.e., only providing information to those businesses that request it, or that otherwise come to the notice of DPW--is necessary. If this approach is adopted, the help of the Hazardous Materials Program in DPH would be welcome. DPH staff who perform inspections could note which businesses seem to use significant quantities of agricultural chemicals, and pass this information on to DPW. Alternatively, or in addition, DPH's database of already inspected businesses could be

searched to identify those that have large quantities of agricultural chemicals. The feasibility of such a search would depend on the specific organization of the database. Businesses identified by these means could be provided with either the same brochure developed for households, or perhaps materials obtained from other sources (e.g., EPA, Association of Bay Area Governments, etc.).

4.3.2.5 Implementation

Implementation of the changes and/or additions noted above will require the series of subtasks outlined below for each activity; the expected time frame for completion of the entire activity follows the title. The City agencies/programs expected to take the lead responsibility are listed for each subtask.

Public

1)	New brochure on agricultural chemical use	6 months	
	a) Develop brochure language	SWMP/Consultant	
	b) Produce brochures	Consultant	
	c) Mail brochures with bills	SWMP	
	d) Develop press release	SWMP	
2)	School lessons--see BMP E1 - HW Dumping Impacts, Section 4.3.1.5		
3)	Field trips and class presentations	9 months	
	a) Organize field trip program	Consultant	
	b) Organize speaker program	Consultant	
	c) Administer programs	SWMP	(Ongoing)
4)	Community Outreach	6 months	
	a) Develop agenda, format	DPW/Consultant	
	b) Produce videotapes	Consultant	
	c) Publicize program	DPW/Consultant	
	d) Contact interested groups	DPW/Consultant	
	e) Present information	DPW	(Ongoing)

Municipal

1)	Agricultural chemical use training	6 months
a)	Develop training	TSE/Other agencies
b)	Produce training materials	TSE
c)	Train departmental trainers	TSE
d)	Conduct training in agencies	Agencies (Ongoing)

Commercial/Industrial

1)	Case-by case approach	Ongoing
a)	Obtain materials from SWMP, et al.	DPW
b)	Brief HMP inspectors	DPW
c)	Perform database search	HMP
d)	Contact identified SQG businesses	DPW/SWMP

4.3.3 E3 - Oil/Grease Controls

Educate re: the effective use of "housekeeping" practices, including the use of absorbents, cleaning compounds, and oil/grease traps for controlling oil and grease in gas stations, automotive repair shops, parking areas, commercial/industrial facilities, and food service facilities.

Targeted sectors	Developing CCSF Agency
Municipal	TSE
Commercial/Industrial	SWMP

4.3.3.1 Status of City Programs - Public

Although implementation plan educational control measure E3 is not directed at residential kitchens, the SWMP under the CAO does tell consumers that cooking oil and grease should be mixed with an absorbent material such as dirt or sand and solidified before being placed in the garbage or brought to the HHWCF (Trapalis, 1990).

4.3.3.2 Status of City Programs - Municipal

All Department of Public Works employees are required to undergo hazardous materials training which includes some discussion of oil and grease spills. Trainers briefly explain the impacts of these compounds on wastewater treatment plant operations and the environment, and instruct personnel in various cleanup methods, including the use of absorbents. The topic of "good housekeeping practices" for oil and grease control is not, however, formally included in the curriculum. The DPW training was originally developed by staff from the Department of Public Health, but has since been adapted by DPW's own education personnel. Different bureaus or divisions within DPW receive slightly different trainings, tailored to their particular occupational requirements (Goodhart, 1990).

As for cooking oil and grease, City-operated cafeterias, restaurants and kitchens are required to comply with the Uniform Plumbing Code, which requires the maintenance of grease traps at all food service facilities.

4.3.3.3 Status of City Programs - Commercial/Industrial

The Bureau of Environmental Health Services in DPH, in conjunction with the Sanitary Fill Company, has produced a flyer for San Francisco restaurants reminding them that cooking oils and grease are prohibited from disposal both in regular trash and in the municipal sewer system. Versions in Chinese and Spanish are available.

The SWMP is currently developing a hazardous waste self-audit checklist for service stations. Funded by a grant from the Alternative Technology Division, Toxics Substances Control Program of the California Department of Health Services (DHS), the checklist will be reviewed by DHS before it is ultimately distributed to all service stations in the state. The checklist will focus on three principal wastes: gasoline, waste motor oil, and waste antifreeze. The hazards to human health and the environment associated with each substance are to be discussed, along with proper procedures for handling and cleanup of spills. For gasoline and motor oil, the proper use (and disposal) of absorbents and a few other housekeeping practices will be addressed (Kehoe, 1990).

4.3.3.4 Program Changes or Additions

"Good housekeeping" practices for preventing the disposal of oil and grease into the sewers are not well addressed in the City's current outreach programs for municipal employees and commercial establishments. To meet the intent of education control measure E3 will require several new efforts from City agencies. Descriptions of proposed activities follow.

Municipal - Within the training programs in the Department of Public Works and other departments that address hazardous material spill response, there are no formal training modules focusing specifically on oil and grease control. The term "good housekeeping" in the language of E3 implies that not only spill cleanup but also spill prevention should be of concern. This deficiency in training applies to employees in City facilities that

handle petroleum-derived oil and grease and those that generate waste cooking oil and grease.

In order to comply with the language of E3, development of a training curriculum to address control of oil and grease should commence immediately. Two separate training modules should be developed, one to address control of petroleum-based oil and grease, and the other to address control of cooking oil and grease. The former waste category poses a greater environmental risk and should be assigned higher priority. Input should be sought from SWMP and the Industrial Waste Division (IWD) of the Bureau of Water Pollution Control, since this division has primary responsibility for enforcing pretreatment requirements. Then either Toxics and Safety Education or IWD staff could present the appropriate trainings to supervisors of City-operated garages, parking lots, and other facilities at which motor oil and grease are a problem, and to supervisors of City-operated food service facilities.

Commercial/Industrial - Both DPH and SWMP have developed or are developing outreach projects that at least partially address the control of oil and grease in commercial/industrial establishments. However, these efforts still fall short of completely fulfilling the intent of Implementation Plan BMP E3. The flyer distributed by the Bureau of Environmental Health Services to restaurants should be expanded to contain much more information on oil and grease control, ideally including some discussion of the impacts of oil and grease both on wastewater treatment plants and on the environment.

The new self-audit checklist for service stations will be a valuable tool in the City's efforts to comply with the requirements of E3 because service stations are a major source of petroleum-based oil and grease wastes. The checklist's discussion of the environmental hazards associated with these wastes and the proper housekeeping methods for their control meshes almost perfectly with the intent of E3. Because the checklists will be available from DHS free of charge, the City's role in this particular program could be reduced to simply ensuring that all service stations in San Francisco receive a copy. The City could act as a central distribution center for the checklists obtained in bulk from DHS, sending them out to all service stations identified in the Hazardous Materials Program database.

Analogous versions of the checklist should also be considered for distribution to parking areas and commercial/industrial facilities that generate significant quantities of waste oil and grease. The City should consider applying to DHS for further grants to develop these checklists. DHS has already prepared a waste audit checklist for automotive repair shops. The City should evaluate whether the available checklist is adequate to meet E3 requirements. If yes, San Francisco should ensure that all automotive repair shops within its jurisdiction receive a copy; if not, the City may have to develop its own.

To complement, and publicize, the checklists, the City should develop and present workshops for affected businesses on oil and grease control. The SWMP and the Hazardous Materials Program (HMP) at DPH should undertake this effort together. The Hazardous Materials Program has more information on which businesses in San Francisco use hazardous materials and already conducts some of its own outreach programs. At the workshops, effective housekeeping practices will be demonstrated, along with explanations of why these are important for the sewers and environment. In addition to the workshops focusing on petroleum-based oil and grease, another set of workshops could be developed to address cooking oil and grease. As with the municipal training, the workshops focusing on petroleum-based wastes will be assigned higher priority, and input into workshop development should be solicited from IWD.

4.3.3.5 Implementation

Implementation of the changes and/or additions noted above will require the series of subtasks outlined below for each activity; the expected time frame for completion of the entire activity follows the title. The City agencies/programs expected to take the lead responsibility are listed for each subtask.

Municipal

1)	Oil/grease control training	6 months
	a) Develop new training modules	SWMP/TSE
	b) Produce training materials	IWD
	c) Train supervisors and managers	IWD/TSE (Ongoing)

Commercial/Industrial

1) Revision of restaurant flyer		3 months
a) Develop new format, text	BEHS/IWD	
b) Produce flyers	BEHS	
c) Distribute flyers	BEHS	(Ongoing)
2) Distribution of service station checklist		Ongoing
a) Obtaining checklists from DHS	SWMP	
b) Identifying S.F. service stations	SWMP	
c) Distribute checklist	SWMP	
3) Workshops		6 months
a) Prepare agenda	SWMP/IWD	
b) Produce materials	HMP	
c) Notify businesses	SWMP/Consultant	
d) Conduct workshops	HMP	(Ongoing)

4.3.4 E4 - Rainfall/Runoff Contact

Educate re: the need to keep rainfall and runoff from contacting potential contaminants. Describe typical examples of the problem and practical solutions.

Targeted sectors	Developing CCSF Agency
Public	DPW
Municipal	IWD/TSE
Commercial/Industrial	IWD

4.3.4.1 Status of City Programs - Public

Currently, San Francisco has no formal outlet for instructing the public about the need to keep rainfall and runoff from contacting potential contaminants and washing them into storm drains and sewers.

4.3.4.2 Status of City Programs - Municipal

Within the Department of Public Works, street cleaning and street repair personnel (in the Bureau of Street Cleaning/Urban Forestry and the Bureau of Street and Sewer Repair, respectively) receive special emphasis in their hazardous materials training on the importance of preventing toxic substances from washing into the sewer system. They are instructed to block off storm drains, and build berms and use absorbents around spills in City streets. Most of this training is, however, verbal, and a detailed written curriculum is not available (Goodhart, 1990). Within the Bureau of Street Cleaning/Urban Forestry, herbicide spray operators are instructed not to spray when there is threat of rain (Busher, 1990).

The Hazardous Materials Program at DPH performs inspections of CCSF facilities that are likely to handle hazardous materials, and issues storage permits where necessary. The level of priority which inspectors assign to rainfall and runoff protection depends on

the permitting situation and on the inspector's judgement. If the inspection is being carried out for a new storage facility that will require a building permit and a Risk Management and Prevention Program (RMPP), then rainfall and runoff diversion must be addressed in the permit. Otherwise, the significance assigned to the issue is left to the discretion of the individual inspector (Tsutsui, 1990).

4.3.4.3 Status of City Programs - Commercial/Industrial

Private businesses are also subject to inspection by Hazardous Materials Program staff, and the same conditions apply with respect to the priority assigned to rainfall and runoff control. Other than this mechanism, there is currently no formal outreach program informing San Francisco businesses of the need to prevent rainfall and runoff from washing hazardous materials into the City's sewer system.

4.3.4.4 Program Changes or Additions

Current CCSF educational programs are not sufficient to meet the intent of Best Management Practice E4. Diversion of rainfall and runoff to prevent contact with toxics receives little or no attention in the public, municipal, and commercial/industrial outreach target sectors. The measures proposed to improve the City's position with respect to the goals of E4 are described below.

Public - Relatively few San Francisco residents are likely to store or use significant volumes of toxic materials outside where they could wash into storm drains. Most San Francisco homes simply do not have much outdoor space where toxics might be stored open to rainfall or runoff. For this reason, extensive program additions or changes are unnecessary.

Indirectly, however, the general public is responsible for a couple of the major sources of contaminants in runoff from City streets--automobile oils and fluids that drip onto the roadways, and metals released from automobile tires. The best solution to this problem is of course to convince people to cut down on their driving. A press release from the DPW could mention this point, perhaps in the context of an "expose" of the many hazardous

substances (e.g., motor oil, transmission fluid, brake fluid, etc.) associated with the average American motor vehicle.

Municipal - Municipal employees are more likely than the general public to directly encounter situations where rainfall and runoff control is appropriate. For example, maintenance personnel may find hazardous wastes abandoned on streets or public areas, or street repair/construction crews may be using asphalt and paint to repair or build roads. For this reason, educating these personnel in accordance with E4 is a high priority. In addition to municipal employee training, actual changes to facilities may eventually be required to prevent rainfall from contacting hazardous waste.

Some discussion of this topic is already included in Department of Public Works trainings, but this information transfer must be incorporated into a formal training module which can be added to the standard hazardous materials training for those municipal employees with duties for which the issue is relevant. For example, employees who work with pesticides, paints, or other chemicals commonly used outdoors will be among those targeted.

In order to identify all of these target employees, the heads of every City department, bureau, program, etc. shall receive a letter explaining the issue, and asking the recipient to submit a list of their employees who should receive such training. Staff in the Industrial Waste Division (IWD) of the Bureau of Water Pollution Control should prepare the letter, since they are most familiar with which contaminants are present in runoff entering San Francisco's sewer system.

The actual training will be developed by the Toxics and Safety Education unit at DPH, with input solicited from the Department of Public Works and other departments which will be significantly impacted. Depending on the numbers of affected personnel in the individual departments, schedules may then be arranged for individual or joint department trainings. Trainers may be personnel from Toxics and Safety Education or from the education units of the individual departments if they so prefer.

Commercial/Industrial - In general, rainfall and runoff protection is not a significant day-to-day issue for private businesses in San Francisco, because of the nature of the industries found within the City limits. Few require storage of significant quantities of toxics outdoors, where rain can reach them (Tsutsui, 1990). Of more concern are

accidental releases, which if severe would be addressed by the Fire Department's Emergency Response Team (ERT), well-trained in the need for runoff prevention (from, at the least, the training described above for municipal employees). To address the problem with very minor releases when the ERT is not called, it will be sufficient for businesses handling hazardous materials to receive a notice explaining the issue, instructing them to contain the spill and block drains, and providing them with the phone number of the Industrial Waste Division where they can call if they have questions. (Of course, the notice should also contain the number of the ERT, in case their aid is warranted.) Businesses will be instructed to display the notice prominently in all areas where hazardous materials are stored or used. IWD will be responsible for preparing and distributing the notice, but distribution will be done in consultation with the Hazardous Materials Program at DPH, since the latter should be able to identify most of the businesses storing toxics in San Francisco. (IWD should also take the opportunity to add brief warnings to the notice about disposing of toxics down the drain; this would further the effort to comply with educational control measure E1 - HW Dumping Impacts at little additional cost.)

4.3.4.5 Implementation

Implementation of the changes and/or additions noted above will require the series of subtasks outlined below for each activity; the expected time frame for completion of the entire activity follows the title. The City agencies/programs expected to take the lead responsibility are listed for each subtask.

Public

1)	Rainfall/runoff control press release		3 months
	a) Develop language	DPW	
	b) Produce releases	DPW	
	c) Distribute releases	DPW	

Municipal

1)	Rainfall/runoff control training		6 months
	a) Identify target trainees		
	i) Prepare letter	IWD	
	ii) Distribute letter	IWD	
	iii) Compile responses	IWD	
	b) Develop new training module	TSE/IWD/SWMP	
	c) Produce training materials	TSE	
	d) Conduct training	TSE	(Ongoing)

Commercial/Industrial

1)	Notice for businesses		6 months
	a) Develop language	IWD	
	b) Produce notice	IWD	
	c) Distribute notice	IWD/HMP	

REGULATORY CONTROL MEASURES

4.4 REGULATORY CONTROL MEASURES

As discussed in the Implementation Priorities section (2.3), both the development of new regulations and the modification of existing ones will require extensive research and discussion between the City agencies involved in their development and enforcement to assess the benefits of regulatory changes. The Special Monitoring Program (Chapter 6.0) will provide valuable information in this regard.

4.4.1 R1 - Improper HW Disposal

Research, strengthen (if necessary), and enforce regulations which give the Discharger the legal authority to control the improper disposal of potentially harmful wastes.

Targeted sectors	Developing CCSF Agency
Public	City Attorney
Municipal	City Attorney
Commercial/Industrial	City Attorney

4.4.1.1 Status of City Codes

There are several Codes within the San Francisco Municipal Code which give CCSF the authority to control the improper disposal of hazardous waste.

Plumbing Code (Appendix E)
Article 3, Sections 301-304 include general regulations regarding the disposal of liquid wastes.
Section 301 - Prohibits the improper disposal of liquid waste or stormwater except through an approved plumbing and drainage system.
Section 302 - Requires plumbing fixtures to be connected up to a drainage system within the building.
Section 303 - Requires every building with plumbing fixtures to be connected to a sewer.

Section 304A - Prohibits the disposal into plumbing fixtures or the sewer system of debris, refuse, hazardous waste (including oil/grease) which could cause damage to the sewer system.
Section 304B - Requires building areas such as roofs or courtyards to discharge stormwater into a building drain or sewer.

Public Works Code (Appendix E)
Section 771 - Prohibits the draining, dumping or depositing of any petroleum-based products, such as oil, grease, crankcase oil, gasoline, or tar, onto City streets or into the sewer system.
Section 121 - Article 4.1, Industrial Waste Discharge Regulations, sets limits on industrial waste. Numerical limits are set for pH, temperature, grease/oil, chemical oxygen demand, and dissolved sulfides. This section also: limits the discharge of radioactive materials, and prohibits the discharge of substances which could damage the sewer system or its operation including: debris, flammables, garbage, toxic substances, or any substance other than runoff.

Health Code (Appendix E)
Article 22, Hazardous Waste Generator Inspections, provides a program for the enforcement of the California Hazardous Waste Control Act (HWCA).
Section 1201 - Authorizes the Department of Public Health (DPH) to enforce the HWCA, and to conduct inspections of hazardous waste generator sites.
Section 1203 - Defines DPH's enforcement duties as 1) conducting inspections, 2) maintaining records, 3) issuing notices of violation, and 4) requiring payment of fees.
Section 1206 - Authorizes DPH to issue notices of violation, ordering the generator to bring the operation into compliance.
Memorandum of Understanding (MOU) - Currently being entered into by the State Department of Health Services and the City DPH to coordinate the implementation and enforcement of the HWCA.

4.4.1.2 City Code Changes or Additions

The combination of City codes described above seems to give the City the legal authority to control the improper disposal of potentially harmful wastes. However, research is

required to determine if the present regulations need strengthening in order to effectively control improper disposal. Stronger regulations may also facilitate enforcement.

4.4.1.3 Implementation

Implementation of the changes and/or additions noted above will require the series of subtasks outlined below for each activity; the expected time frame for completion of the entire activity follows the title. The City agencies/programs expected to take the lead responsibility are listed for each subtask.

1)	Research	6 months
	a) Review codes	City Attorney
	b) Submit evaluation to RWQCB	City Attorney
	c) Discuss with RWQCB	City Attorney
2)	Strengthen code(s) (if necessary)	18 months
	a) Draft new code(s)	City Attorney
	b) Propose code(s) to Supervisors	City Attorney
	c) Adopt code(s)	Board of Supervisors
3)	Enforce code(s) (if necessary)	Ongoing
	a) Enforce code(s)	CA/Other agencies

4.4.2 R2 - Improper Refuse Disposal

Research, strengthen (if necessary), and enforce regulations which give the Discharger the legal authority to prevent the improper disposal of soil, debris, refuse, or other pollutants into storm drains, sewers and catch basins.

Targeted sectors	Developing CCSF Agency
Public	City Attorney
Municipal	City Attorney
Commercial/Industrial	City Attorney

4.4.2.1 Status of City Codes

There are several Codes within the San Francisco Municipal Code which give CCSF the authority to control the improper disposal of soil, debris, or refuse into the sewer system.

Plumbing Code (Appendix E)
Article 3, includes general regulations regarding the disposal of wastes.
Section 304A - Prohibits the disposal into plumbing fixtures or the sewer system of debris, refuse, hazardous waste (including oil/grease) which could cause damage to the sewer system.

Public Works Code (Appendix E)
Article 17, Control of Dumps Disposing of Materials from Construction or Demolition, regulates the permitting of dumps and their methods of disposal.
Section 856 - Prohibits waste from being dumped in or allowed to reach water, unless a fence preventing the waste from floating from the dump is in place.

Health Code (Appendix E)
Article 6, Garbage and Refuse, includes several sections regulating the dumping of refuse.
Section 280 - Prohibits the dumping of refuse, garbage, dirt or rubbish onto streets or lands; or into any water or waterways within CCSF.
Section 286 - Sets the hours for removal of fish waste from all wholesale fish markets.

Section 307 - Sets the hours for removal of vegetable waste from wholesale vegetable markets.

Police Code (Appendix E)
Article 1 regulates litter on streets through several sections.
Section 33 - Prohibits the throwing of rubbish, dirt, debris, or discarded material upon any sidewalk, street, alley, or gutterway in CCSF.
Section 34 - Prohibits the accumulation of litter upon sidewalks in CCSF.

4.4.2.2 City Code Changes or Additions

The combination of City codes described above seems to give the City the legal authority to prevent the improper disposal of soil, debris, and refuse into the sewer system. However, research is required to determine if the present regulations need strengthening in order to effectively control improper disposal. Stronger regulations may also facilitate enforcement.

4.4.2.3 Implementation

Implementation of the changes and/or additions noted above will require the series of subtasks outlined below for each activity; the expected time frame for completion of the entire activity follows the title. The City agencies/programs expected to take the lead responsibility are listed for each subtask.

1)	Research	6 months
	a) Review codes	City Attorney
	b) Submit evaluation to RWQCB	City Attorney
	c) Discuss with RWQCB	City Attorney

2) Strengthen code(s) (if necessary)	18 months
a) Draft new code(s)	City Attorney
b) Propose code(s) to Supervisors	City Attorney
c) Adopt code(s)	Board of Supervisors
3) Enforce code(s) (if necessary)	Ongoing
a) Enforce code(s)	CA/Other agencies

4.4.3 R3 - Oil/Grease Controls

Research, strengthen (if necessary), and enforce regulations which give the Discharger the authority to require oil and grease controls in areas which are significant sources (e.g., gas stations, automotive shops, wrecking yards, machine shops, commercial/industrial facilities, parking areas, and food service establishments).

Targeted sectors	Developing CCSF Agency
Public	City Attorney
Municipal	City Attorney
Commercial/Industrial	City Attorney

4.4.3.1 Status of City Codes

There are several Codes within the San Francisco Municipal Code which give CCSF the authority to require oil and grease controls in areas which are significant sources.

Plumbing Code (Appendix E)
Part 1 regulates the installation of plumbing fixtures and incorporates by reference relevant sections of the Uniform Plumbing Code, developed by the International Association of Plumbing and Mechanical Officials.
Section 708 (Uniform Plumbing Code) - Requires the installation of grease, oil, and sand interceptors (clarifiers, separators) when they are necessary for the proper handling of liquid wastes containing grease, flammable wastes, acids, alkalis, sands, solids, or other harmful ingredients.
Section 711 (Uniform Plumbing Code) - Requires the installation of grease traps for food service establishments such as restaurants, cafeterias, bars, clubs, hotel and school kitchens. This section regulates the installation, maintenance and flow specifications for grease traps.
Section 712 (Uniform Plumbing Code) - Recommends sizing criteria for grease traps based on number of fixtures connected and flow rate required.

Fire Code (Appendix E)
Article 29, Garages and Parking Lots, includes a section regarding the handling of gasoline and oils.
Section 29.104.(b) - Requires garage floors to drain to approved oil separators or traps. Stipulates collection of trap contents at sufficiently frequent intervals to prevent oil from being carried into the sewers.

4.4.3.2 City Code Changes or Additions

The combination of City codes described above addresses only a few of the significant sources of oil and grease. The codes do not seem to give the City the legal authority to require oil and grease controls in all areas mentioned as significant sources in the BMP language. Therefore, research is required to determine what additional regulations are needed to effectively require oil and grease controls for significant sources. The City Attorney's office will conduct the research with assistance from the appropriate City agencies responsible for enforcement. Additional or stronger regulations may also facilitate enforcement.

4.4.3.3 Implementation

Implementation of the changes and/or additions noted above will require the series of subtasks outlined below for each activity; the expected time frame for completion of the entire activity follows the title. The City agencies/programs expected to take the lead responsibility are listed for each subtask.

1)	Research	6 months
	a) Review codes	City Attorney
	b) Submit evaluation to RWQCB	City Attorney
	c) Discuss with RWQCB	City Attorney

2) Strengthen code(s) (if necessary)	18 months
a) Draft new code(s)	City Attorney
b) Propose code(s) to Supervisors	City Attorney
c) Adopt code(s)	Board of Supervisors
3) Enforce code(s) (if necessary)	Ongoing
a) Enforce code(s)	CA/Other agencies

4.4.4 R4 - Rainfall/Runoff Contact

Develop and implement regulations which require landowners and/or tenants to provide covers (e.g., roofs, tarps) to keep rain off of areas which contain contaminants (e.g., chemical storage areas, waste storage areas, contaminated industrial areas); and to keep runoff from draining through areas which contain contaminants.

Targeted sectors	Developing CCSF Agency
Municipal	City Attorney/DPH
Commercial/Industrial	City Attorney/DPH

4.4.4.1 Status of City Codes

There are no Codes within the San Francisco Municipal Code which give CCSF the authority to require landowners and/or tenants to provide covers (e.g., roofs, tarps) to keep rain off of areas which contain contaminants, and to keep runoff from draining through areas which contain contaminants.

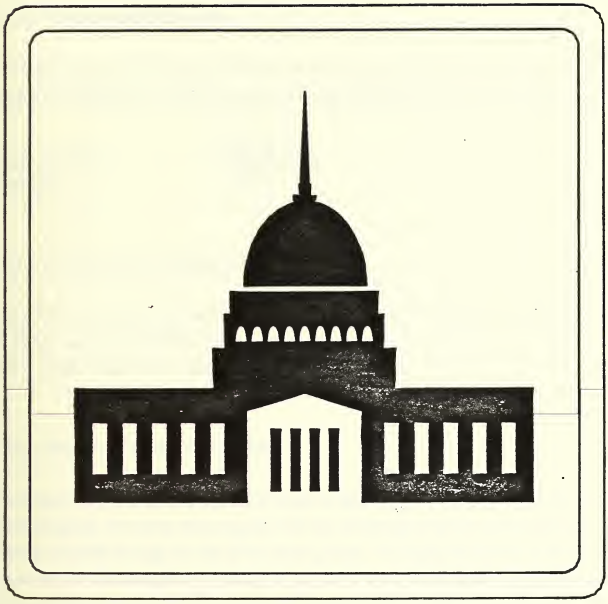
4.4.4.2 City Code Changes or Additions

Because of the apparent lack of City codes requiring covers over contaminants, research is required to determine the need for such code(s). If new code(s) are necessary, language for the new code(s) must be developed, drafted, passed, and encoded into the regulations.

4.4.4.3 Implementation

Implementation of the changes and/or additions noted above will require the series of subtasks outlined below for each activity; the expected time frame for completion of the entire activity follows the title. The City agencies/programs expected to take the lead responsibility are listed for each subtask.

1) Research	6 months
a) Review codes	City Attorney/DPH
b) Submit evaluation to RWQCB	City Attorney
c) Discuss with RWQCB	City Attorney
2) Develop code(s)	18 months
a) Draft new code(s)	City Attorney/DPH
b) Propose code(s) to Supervisors	City Attorney
c) Adopt code(s)	Board of Supervisors
3) Enforce code(s)	Ongoing
a) Enforce code(s)	CA/Other agencies



PUBLIC AGENCY CONTROL MEASURES

4.5 PUBLIC AGENCY CONTROL MEASURES

4.5.1 P1 - Sewer Inlet Stencilling

Label storm drain inlets and provide signs along the banks of storm drains, sewers, catch basins and creeks explaining the environmental impacts of dumping wastes.

Targeted sectors	Developing CCSF Agency
Municipal	DPW

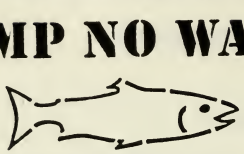
4.5.1.1 Status of City Programs - Municipal

This BMP is targeted specifically at the City and County of San Francisco. Presently, CCSF has no program for painting environmental warnings near sewer inlet inlets, sewers or catch basins (Cunningham, 1990).

4.5.1.2 Program Changes or Additions

Municipal - Compliance with this BMP requires the development of a completely new CCSF program. However, this program will take advantage of public participation as much as possible through the use of volunteer groups. To begin, the Bureau of Street and Sewer Repair will develop an inventory of the City's sewer inlets, sewers, catch basins and any other inlets to the system to which the general public has access, including private sewer inlets. The Industrial Waste Division will develop a sewer inlet priority list for stencilling.

The DPW will develop the language and a stencil to be used for painting the inlets. For example, Seattle uses the phrases, "DUMP NO WASTE. DRAINS TO STREAM.", on its stencils. A stencil with similar language could be developed specific to the City's Westside (see below).



Instructions will be provided on procedures for obtaining permission, how to order and use the stencils, and the types of paint to use. The availability of stencils and instructions will be publicized via PSAs and SF CityTV (see 4.3.1 E1 - HW Dumping Impacts) to interested groups, such as boy/girl scout troops, neighborhood groups, environmental organizations and schools. Stencilling sewer inlets could be added as a lesson/field trip to the San Francisco Recycling Program's 4th R curriculum (see 4.3.1.4 Public) and the tours of the WPCP/HHWCF (see 4.3.1 E1 - HW Dumping Impacts).

4.5.1.3 Implementation

Implementation of the changes and/or additions noted above will require the series of subtasks outlined below for each activity.

Municipal

1) Stencilling sewer inlets
   a) Develop inventory of inlets
   b) Develop stencil language
   c) Produce stencils
   d) Develop instructions
   e) Produce instructions
   f) Coordinate volunteer program
   g) Track program/inventory

4.5.2 P2 - Convenient HW Collection

Develop and implement programs which provide convenient means for people to properly dispose of oil, antifreeze, pesticides, herbicides, paints, solvents, and other potentially harmful chemicals (recycle if possible).

Targeted sectors	Developing CCSF Agency
Public	SWMP

4.5.2.1 Status of City Programs - Public

San Francisco has a convenient means for people to dispose of their hazardous waste. The Household Hazardous Waste Collection Facility (HHWCF) developed by Sanitary Fill Co. and the Solid Waste Management Program within the Chief Administrator's Office has been in operation since January, 1988 (Johnston and Kehoe, 1989). CCSF's facility was the first of its kind in the nation (World Wastes, 1988) and has been used by communities within the state and across the country as a model for developing their own facilities.

The HHWCF is located on Tunnel Ave. near Candlestick Park, within ten miles of any residence in the City. It is open to San Francisco residents only, from 8 am to 4 pm Thursday, Friday and Saturday. For more than 150 days per year, the HHWCF's location and operating hours provide San Francisco residents with a facility for the proper disposal of hazardous waste within 20-30 minutes of their home. The facility accepts all the chemicals mentioned in P2 including, oil, antifreeze, pesticides, herbicides, paints, solvents, and other potentially harmful chemicals.

The Household Hazardous Waste Collection Facility's Second Annual Report (Appendix F) provides details about the facility's usage, types and amounts of wastes received, and quantity of wastes recycled. In general, the use of the facility and thus the effectiveness of the HHW collection program increased significantly between the first and second years of operation. Both the number of participants and the volume of waste received increased in the second year. In 1989, 4,500 residents brought a total of 36,485 gallons of waste to the facility (CCSF, 1990b).

Figure 4.5-A and Table 4.5-A provide information on the household hazardous waste delivered to the HHWCF over the last two years.

Besides hazardous waste collection, the HHWCF has strongly promoted recycling. In 1989, over 70% of the wastes received were either recycled (33%) or blended for use as a supplemental fuel in a cement kiln (38%)(CCSF, 1990b). Figure 4.5-B and Table 4.5-B provide information on the management of household hazardous waste delivered to the HHWCF.

4.5.2.2 Program Changes or Additions

Public - Because of CCSF's relative preeminence in the convenient collection of household hazardous waste, no immediate changes or additions to its current program will be required to meet the language of source control measure P2. Nevertheless, recognizing the environmental benefits attainable, CCSF is studying ways to even further increase the convenience of proper household hazardous waste disposal in San Francisco.

The SWMP has identified waste motor oil, generated by "do-it-yourselfers," as deserving of special emphasis. Curbside pickup of used oil for recycling is among the mechanisms being considered by CCSF to combat the significant water pollution attributed to dumping of this waste. Other methods of controlling management of used oil are also being studied, and will continue to be evaluated in the future. Project ROSE ("Recycled Oil Saves Energy") in Alabama is a model program whose experience could prove to be a valuable resource in this effort.

One already planned measure to increase community awareness of, and participation in, proper disposal of used oil and other household hazardous wastes is a one-day household hazardous waste collection event, to be held sometime next year at various locations around the City. The SWMP wants to determine if establishing collection centers closer than the HHWCF will entice more people to take advantage of the service. If successful, such decentralized events may be organized more frequently, as a supplement to the permanent facility operations (Quan, 1990).

Innovative ideas in the field of household hazardous waste management abound, and San Francisco, when not developing these ideas itself, will be studying programs operated in

other municipalities. One such program is the mobile collection program instituted in the Seattle, WA area, known as the "Wastemobile." The Wastemobile consists of a series of trailers containing laboratories, a first aid station, and other facilities, set up in different locations around King County, WA for two weeks at a time. Local residents simply drive up to the site and drop off their items with trained personnel. The program has been an enormous success in its first year of operation.

Another potential candidate for a program addition is the establishment of HHW collection operations at City wastewater treatment plants, or "Publicly Owned Treatment Works" (POTWs). This strategy is currently receiving promotion from EPA (U.S. EPA, 1990), and several municipalities around the country have begun such programs. Palo Alto, for example, has organized a schedule of monthly HHW collection events at its water quality control plant; CCSF could solicit useful advice from its southern neighbor, as well as from other established programs, on arranging similar operations in San Francisco.

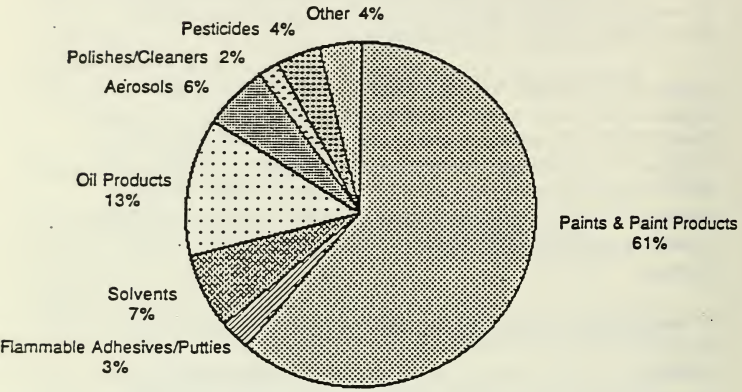
In sum, while San Francisco's record in terms of making household hazardous waste disposal environmentally sound and convenient is excellent, the City will continue to investigate means of improvement. New programs will be instituted as their cost-effectiveness is verified. In addition, established programs such as the HHWCF will continue to be publicized through all of the new community outreach activities discussed for the educational control measures (E1-E4).

4.6 SUMMARY

Table 4.6 summarizes the status of BMP implementation as a result of the City's existing source control efforts. Overall, the City has programs/codes for most of the BMPs in the Implementation Program. Generally, the City has educational programs which come very close to full compliance with the educational control measures (E1-HW Dumping Impacts, E2-Agricultural Chemicals Use, E3-Oil/Grease Controls, and E4-Rainfall/Runoff Contact). Mostly minor additions to existing programs will achieve full implementation of these BMPs. In terms of the regulatory control measures (R1-Improper HW Disposal, R2-Improper Refuse Disposal, R3-Oil/Grease Controls, and R4-Rainfall/Runoff Contact), the City has codes which address the BMP language for R1-R3, but no codes which address R4. Evaluation of the current codes will be necessary for

Figure 4.5-A

Hazardous Waste Delivered to the HHWCF by Product Type*
January '88 - December '89
(Percentages based on total number of containers)



oes not include 168 cubic
. yards of asbestos.

Source: Kelley Johnston and Cedar Kehoe
Sanitary Fill Company

Table 4.5-A

Total Drum Volumes Shipped from the HHWCF
First Year vs. Second Year
(In gallons)

WASTE TYPE	FIRST YEAR (1988)	SECOND YEAR (1989)	TOTALS
Paint:			
Latex	3,850	1,760	5,610
Oil Base	5,170	11,495	16,665
Oil Products	6,975	10,725	17,700
Flammable Solids[1]	3,780	4,235	8,015
Inorganic Acids/Bases	1,650	1,105	2,755
Organic Acids/Bases	870	1,160	2,030
Solvents	3,965	1,965	5,930
Aerosols	900	1,363	2,263
Poisons/Pesticides	1,685	1,127	2,812
Oxidizers	440	399	839
Dioxin Precursors[2]	495	330	825
Antifreeze	115	210	325
Asbestos[3]	48	120	168
Car Batteries[4]	171	495	666
Other[5]	110	116	226
Total Volume	30,176	+ 36,485	= 66,661

1 Contained in adhesives, putties and solid waxes/resins.

2 Contained in wood preserving products.

3 Measured in cubic yards; not included in total volume.

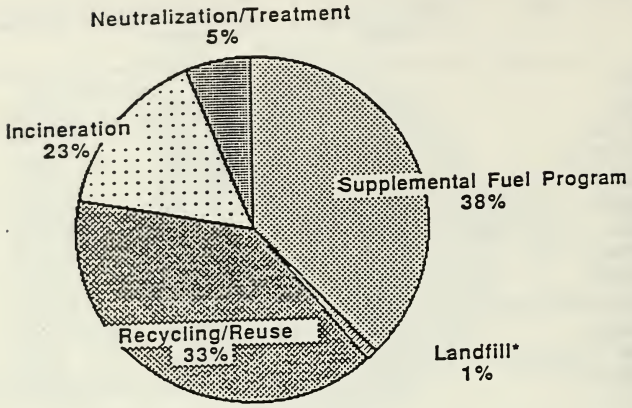
4 A car battery is equivalent to 1 gallon of waste.

5 Includes sulfur waste, organic peroxides, PCB waste and California regulated wastes not included in other categories.

Source: Kelley Johnston and Cedar Kehoe
Sanitary Fill Company

Figure 4.5-B

Off Site Management of HHWCF Waste
for Two Years of Operation
(Percentages based on drum volumes, in gallons)



*Does not include 168 cubic yards of asbestos.

Source: Kelley Johnston and Cedar Kehoe Sanitary Fill Company

Table 4.5-B
On and Off Site Management of
HHWCF Waste
(Current)

WASTE TYPE	ON SITE WASTE HANDLING	OFF SITE WASTE MANAGEMENT
Latex Paint Oil Products Antifreeze	Consolidate ("Bulk")	Recycling/Reprocessing
Paint Solvents	Consolidate	Supplemental Fuel Program
Flammable Solids	Consolidate (labpacked in 1989)	Incineration
Aerosols	Containerize (placed in drum w/o absorbant)	Incineration
Organic Acids/Bases Poisons/Pesticides	Labpack	Incineration
Dioxin Precursors	Labpack	Landfill
Inorganic Acids/Bases Cyanides Oxidizers	Labpack	Neutralization/Treatment
Asbestos	Double bagged, stored in closed box	Landfill
Car Batteries	Stored in tubs	Recycling
Other	Varies	Varies

Source: Kelley Johnston and Cedar Kehoe
Sanitary Fill Company

Table 4.6

DPW — 26-Sep-90

BEST MANAGEMENT PRACTICES INVENTORY

IMPLEMENTATION PROGRAM (10 BMPs)

	SECTOR			STATUS OF BMP IMPLEMENTATION		
BMP	PUBLIC	MUNICIPAL	COMMERCIAL/ INDUSTRIAL	NONE	PARTIAL	FULL
E1	X				X	
		X			X	
			X		X	
E2	X				X	
		X			X	
			X		X	
E3		X			X	
			X		X	
E4	X			X		
		X			X	
			X		X	
R1	X	X	X		X	
R2	X	X	X		X	
R3	X	X	X		X	
R4		X	X	X		
P1		X		X		
P2	X					X

5.0 STUDY PLAN

TO BE SUBMITTED UNDER SEPARATE COVER

6.0 SPECIAL MONITORING PROGRAM

This chapter discusses the City's proposed Special Monitoring Program to assess the effectiveness of source control measures in preventing pollution.

6.1 INTRODUCTION

In addition to the Implementation Program and the Study Plan components of the Program Plan, provision 8.c of the permit (Appendix A) requires CCSF to "propose a special monitoring program to assess the effectiveness of the source control measures in reducing the level of toxicants in the decant." The data generated by the Special Monitoring Program will also help identify potential pollutants of concern. As a result, the Special Monitoring Program will not only assess the effectiveness of the source control measures, but it will also help focus future source control measures on toxicants of concern.

6.2 GENERAL APPROACH

The City's general approach is composed of the following elements: 1) Simple design, 2) Focused on toxicants of greatest concern, and 3) Influent monitoring to assess decant.

1) Simple design - Because of the potential difficulties in sampling during wet weather and the tendency for sampling equipment malfunctions under such conditions, the monitoring program's design will be kept as simple as possible.

2) Focused on toxicants of greatest concern - The City will concentrate its efforts on those toxicants in the decant that appear to be of greatest concern, rather than spread its effort over all 78 Table B constituents in the Ocean Plan. Constituent concentrations will first be compared with Table B objectives. Those constituents with relatively high concentrations (10-20% of Ocean Plan limits) will be designated as pollutants of most immediate concern.

Results from this monitoring program as well as the regular effluent self-monitoring program will be used to modify the list of pollutants, as needed, to keep the program focused on the toxicants of most immediate potential concern. The toxicants will be analyzed at all of the program's sampling stations. This approach will begin the development of a complete picture of the "flow" of these toxicants into and through the system.

3) **Influent monitoring to assess decant** - DPW proposes to monitor the influent to the treatment plant as the best way of assessing the effectiveness of the BMPs. DPW believes the influent flows are a better indicator of toxicants introduced into the system than the decant flows. DPW also predicts that because of the intermittent and unpredictable nature of the decant flows, the logistics of monitoring the decant directly would complicate the monitoring effort. These complications would have an adverse effect on the recovery of data.

6.3 IDENTIFICATION OF TOXICANTS OF POTENTIAL CONCERN

Based on a combined database of CCSF stormwater composite averages and data from the Nationwide Urban Runoff Program (NURP) (U.S. EPA, 1982), DPW has established the following toxicants as being of most immediate potential concern: metals, PAHs, grease/oil (petroleum-based), and total phenols. DPW will also analyze all samples for ammonia.

While ammonia is not a pollutant of significant concern at the City's outfall site, ammonia levels are an excellent indicator of the percentage of sampled flow that is derived from domestic sources. Ammonia is ubiquitous in sanitary flows at predictable concentrations, whereas it is essentially absent in urban runoff. Knowledge of the percent sanitary flow is important for understanding potential sources of other toxicants found in the combined flow.

6.4 STATUS OF CURRENT MONITORING

The City's current monitoring efforts are not sufficient to evaluate the BMPs. However, one data set, because of its long term nature and focus on wet weather flow, does provide

some useful baseline information for this monitoring program (CCSF, 1990d). This data set consists of wet weather samples taken at a combined flow site, upstream of the SWOO, and analyzed for the following nine metals; arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc. An analysis of the data from 1987 through 1990 (to date) shows that there has been no significant difference in the annual mean concentration of any of the metals in the combined flow between 1987 and 1990.

6.5 PROPOSED NEW MONITORING EFFORTS

To specifically address the effectiveness of the BMPs in reducing the level of toxicants in the decant, a new Special Monitoring Program is proposed. The program will include two components, influent monitoring at the Richmond-Sunset plant, and monitoring of a separate sewer system area in the City.

6.5.1 RICHMOND-SUNSET INFLUENT MONITORING

The Richmond-Sunset plant's influent will be sampled and analyzed for the toxicants of potential concern, namely; metals, PAHs, grease/oil (petroleum-based), ammonia, and total phenols. Sampling of storm flows (which often occur at night or in the early morning) will be facilitated by the presence of personnel at the plant 24 hours a day, 365 days a year. Access to, and maintenance of the sampling units will also be facilitated by their location at the plant.

During each of the next five years, starting with the beginning of the rainy season, storm flows will be analyzed, up to a maximum of 10 per year. Storm flows occur when the influent flow to the Richmond-Sunset plant exceeds 45 million gallons per day (mgd). To assess the varying effects of storms that occur over the course of a winter, a maximum of one storm per week will be monitored. Composite samples will be taken at the plant and analyses will be performed according to standard protocols.

As discussed previously, results from this monitoring program will be used to modify the list of pollutants, as needed, to keep the program focused on the toxicants of most immediate potential concern. To verify its selection of the toxicants of concern, CCSF

proposes to perform priority pollutant scans, during wet weather, at least 5 times during the first year of the monitoring program (weather permitting).

6.5.2 SEPARATE SEWERS AREA MONITORING

In one area on the City's west side, just north of the zoo, known as the "Lower Vincente Drainage Basin," there are separate sewer systems for storm and sanitary sewage (Figure 6.5). The area is bordered by 44th and 45th Aves. to the east, Sloat Blvd. to the south, the Great Highway to the west, and Rivera St. to the north. It is approximately 14 city blocks covering about 52 acres.

The existence of a separate sewer system in a city dominated by a combined system, presents a unique opportunity to sample and define the separate contributions of the storm and sanitary flows. During the first year of the monitoring program, a sampling station with two sampling units will be established to monitor the separate flows. The constituents analyzed will be the same as those analyzed at the Richmond-Sunset influent. Land use characteristics in the Lower Vincente area are similar to the Westside area as a whole, therefore the data will be representative.

6.6 QUALITY ASSURANCE (QA) / QUALITY CONTROL (QC)

Special attention will be paid to the QA/QC aspects of the monitoring program to ensure the generation of high quality data. The Laboratory Division of the Bureau of Water Pollution Control (BWPC) is state certified and staffed by certified water quality analysts. All laboratory procedures including sampling, chain-of-custody, instrument calibration, analytical protocols, documentation, and reporting are performed according to Standard Operating Procedures (SOPs) in accordance with EPA standards.

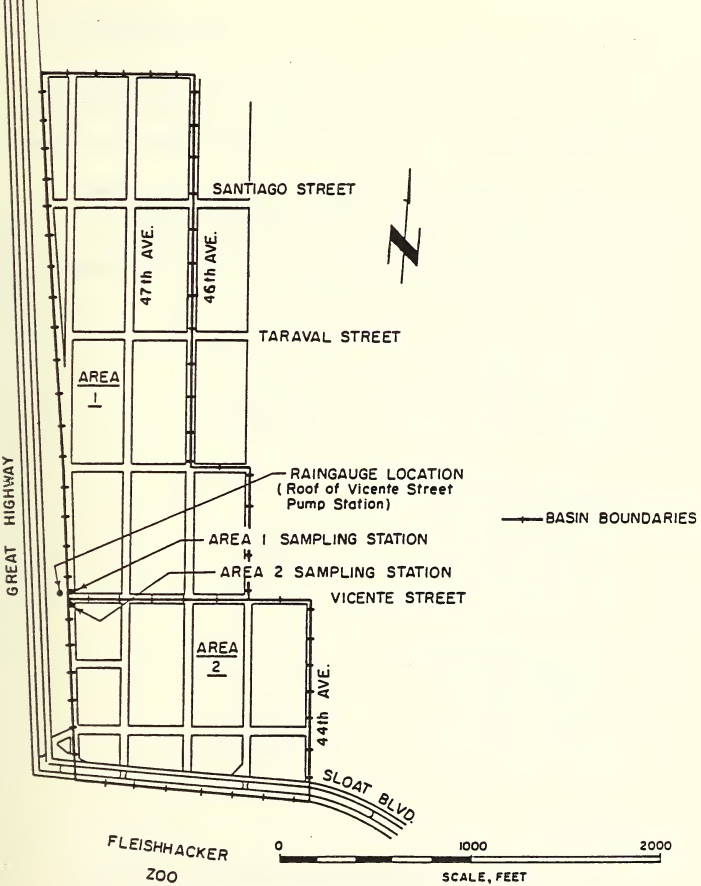


Figure 6.5 Vincente Street Drainage Basin

Source: Engineering Science, 1971

6.7 IMPLEMENTATION

Implementation of the Special Monitoring Program will require the series of subtasks outlined below. The Laboratory Division of BWPC has primary responsibility for developing and implementing this monitoring program. The other City agencies expected to be involved with the program are listed across from the task for which they are responsible.

1) Priority Pollutant Scans	Year 1
a) Conduct sampling	BWPC
b) Perform analysis	Contract Lab
c) Report results	Lab Division
2) Richmond-Sunset Influent Monitoring	Years 1-5
a) Install sampling stations	IWD
b) Conduct sampling	Lab Division
c) Perform analysis	Lab Division
d) Report results	Lab Division
3) Separate Sewers Area Monitoring	Year 1
a) Install sampling stations	IWD
b) Conduct sampling	IWD
c) Perform analysis	Lab Division
d) Report results	Lab Division

6.8 SUMMARY

Because of the phased implementation of the BMPs, their effects may not be readily apparent during the first few years of the monitoring program. However, during that time, the database generated by the program will provide valuable information useful to not only CCSF but also to similar urban areas. Once the BMPs approach full implementation, the Special Monitoring Program will begin to evaluate the effectiveness of the source control measures in reducing the level of toxicants in the decant. The

results of the analysis will provide feedback to the Implementation Program and Study Plan phases of the Program Plan. This feedback will help focus future source control measures on the pollutants of concern.

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8.0 GLOSSARY

Agricultural chemicals	Chemicals used for agriculture, such as insecticides, herbicides, fungicides, and fertilizers
AHM	Acutely Hazardous Material
BEHS	Bureau of Environmental Health Services, DPH
Beneficial uses	Beneficial uses of the waters of the state that may be protected against quality degradation include but are not limited to: domestic; municipal; agricultural and industrial supply; power generation; recreation; esthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. [Cal. Water Code Sec. 13050(f)] (equivalent to "designated uses" under federal law)
BMP	Best Management Practices. Source control measures, defined in the Federal regulations [40 CFR 130.2(m)] as methods, measures, or practices selected by an agency to meet its nonpoint source control needs.
BSCUF	Bureau of Street Cleaning / Urban Forestry, DPW
BSSR	Bureau of Street and Sewer Repair, DPW
BWPC	Bureau of Water Pollution Control. DPW
CA	City Attorney
CAO	Chief Administrative Officer
CCSF	City and County of San Francisco
CHWMP	County Hazardous Waste Management Plan
CIWMP	Countywide Integrated Waste Management Plan

Combined sewer	A sewer system in which the sanitary sewers and storm sewers are combined.
CPC	City Planning Commission
CPD	City Planning Department
CSO	Combined sewer overflow. Flows of raw sewage and storm water from a combined sewer in excess of the interceptor or regulator capacity that are discharged into a receiving water without going to a publicly owned treatment works (POTW). [SWRCB CSO Control Strategy]
CWPCA	California Water Pollution Control Association
Decant	Excess flows from the Westside Transport overflow mechanism. During large storm events, these flows cannot be treated at the Richmond-Sunset Plant and are discharged through the Southwest Ocean Outfall (SWOO).
Developing agency	City agency required to take actions to develop programs which will satisfy the permit language. These programs may include such items as educational lessons, brochures, handouts, training, workshops, or regulations.
DHS	(California) Department of Health Services
DPH	Department of Public Health
DPT	Department of Parking and Traffic
DPW	Department of Public Works
Educational control measures	Source control measures which use education, public information, and technology transfer to disseminate information to the public, including small businesses, community organizations, and neighborhood groups.

Effluent	1. Solid, liquid, or gaseous wastes that enter the environment as a result of human activity. 2. The discharge or overflow of fluid from ground or subsurface storage.
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ERT	Emergency Response Team, SFFD
Food chain	The pyramidal relationship of producers (plants) and consumers (animals) in which solar energy is converted through photosynthesis to plant tissue which is consumed by animals who are in turn consumed by larger animals. At successively higher levels of the chain consumers are usually larger in size but fewer in number.
HHW	Household hazardous waste
HHWCF	Household Hazardous Waste Collection Facility
HMAC	Hazardous Materials Advisory Committee
HMP	Hazardous Materials Program, DPH
HW	Hazardous waste
HWAC	Hazardous Waste Advisory Committee
HWCA	(California) Hazardous Waste Control Act
HWP	Hazardous Waste Program, DPH
Influent	Flows of wastewater entering the POTW.
IWD	Industrial Waste Division, DPW

LHH	Laguna Honda Hospital
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheet. Documentation developed by the manufacturer of a hazardous material to provide information (if available) on acute and chronic human health effects associated with the particular product, special characteristics such as flammability and ignitability, and proper storage and handling procedures.
Nonpoint source	Any source of discharge to a surface water body that is not from a point source. [SWRCB Order no. 85-1]
NPDES	National Pollutant Discharge Elimination System. The national program administering permits for point source discharges of wastewater to navigable waters of the United States, and imposing and enforcing pretreatment requirements. Authorized by sections 307, 318, 402, and 405 of the Clean Water Act. The term includes approved state programs.
Ocean Plan	A water quality control plan for ocean waters of the State. Ocean waters are the territorial marine waters of the State as defined by California law.
OER	Office of Environmental Review, CPD
PAD	Parking Authority Division, DPT
PAHs	Polynuclear aromatic hydrocarbons. The sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene.
PD	Purchasing Department

Point source	Any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.
Pollution	An alteration of the quality of the waters of the state by waste to a degree which unreasonably affects (1) such waters for beneficial uses, or (2) facilities which serve such beneficial uses. "Pollution" may include "contamination". [Cal. Water Code Sec. 13050(1)]
POTW	Publicly owned treatment works. (equivalent to Water Pollution Control Plant or Water Quality Control Plant or treatment plant)
Primary treatment	The physical removal of the majority of suspended solids and organic matter from wastewater through screening and sedimentation.
Public agency control measures	Source control measures which are implemented by planning, public works, and health agencies.
PSA	Public Service Announcement
PUC	Public Utilities Commission
QA	Quality assurance. A system for ensuring the maintenance of proper standards in manufactured goods, especially through the use of quality assurance plans.
QC	Quality control. A system for ensuring the maintenance of proper standards in manufactured goods, especially by periodic inspection of the product.
Regulatory control measures	Source control measures which develop and implement new or amended regulations and public policy directives.

RMPP	Risk Management and Prevention Program
Runoff (urban)	Water from rainfall, irrigation, or street washing that flows over the surface of the ground.
RWQCB	Regional Water Quality Control Board
Sanitary sewer	A sewer system for conveying domestic and industrial wastewater.
SARA	Superfund Amendments and Reauthorization Act, 1986.
Secondary treatment	Biochemical treatment of wastewater after a primary stage, using bacteria to consume the residual organic material in the wastewater. Use of trickling filters, or the activated sludge process, removes floating and settleable solids and about 90 percent of oxygen demanding substances (BOD), and suspended solids (TSS). Disinfection with chlorine is usually the final stage of secondary treatment.
SFFD	San Francisco Fire Department
SFGH	San Francisco General Hospital
SFMR	San Francisco Municipal Railway (Muni), PUC
SFPD	San Francisco Police Department
SFRP	San Francisco Recycling Program, CAO
SLUG	San Francisco League of Urban Growers
SOP	Standard operating procedure. An established procedure to be followed for a given operation or situation.
Source control measures	Preventative measures designed to control pollutants at their sources.
SPUR	San Francisco Planning and Urban Research

SQG	Small Quantity Generator
Storm sewer	A sewer system for separating storm water from domestic and industrial wastewater.
SWMP	Solid Waste Management Program, CAO
SWOO	Southwest Ocean Outfall
SWRCB	State Water Resources Control Board
Total phenols	Non-chorinated plus chorinated phenolic compounds.
Toxicant	(1) A chemical that controls pests by killing rather than controlling them. (2) A harmful substance or agent that may injure an exposed organism. [Environmental Glossary 4th ed.]
TSE	Toxics and Safety Education, DPH
TSS	Bureau of Toxics and Safety Services, DPH
Water quality	The chemical, physical, biological radiological, bacteriological, and other properties or characteristics of water which affect its use. [Cal. Water Code Sec.13050(h)]
Water Quality Control Plan	A designation or establishment for waters within a specified area of (1) beneficial uses to be protected, (2) water quality objectives, and (3) a program of implementation needed for achieving water quality objectives. [Cal. Water Code Sec. 13050(j)]
Water quality objective	The measurable limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area and time frame. Water quality objectives may be either numerical or narrative. [Cal. Water Code Sec. 13050 et seq.]

WDR	Waste discharge requirement
WPCF	Water Pollution Control Federation
WPCP	Water Pollution Control Plant